Access DB# 106616

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Jill Gray Examiner #: 66983 Date: 10/23/03
Art Unit: 1774 Phone Number 308 2381 Serial Number: 10/003529
Mail Box and Bldg/Room Location: CP3-11E08 Results Format Preferred (circle) PAPER DISK E-MAIL

If mor than one search is submitted, please prioritize searches in order of need.

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Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Compact Hybrid fiber reinforced rods for optical cable reinforcements and method

Inventors (please provide full names): Hager, Thomas ; Lehman, Richard

Earliest Priority Filing Date: 10/31/01

***For Sequence Searches Only* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.**

23

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STAFF USE ONLY	**Type of Search**	**Vendors and cost where applicable**
Searcher: EJ	NA Sequence (#)	STN $161.76
Searcher Phone #:	AA Sequence (#)	Dialog
Searcher Location:	Structure (#)	Questel/Orbit
Date Searcher Picked Up:	Bibliographic ✓	Dr.Link
Date Completed: 10-28-03	Litigation	Lexis/Nexis
Searcher Prep & Review Time: 10	Fulltext	Sequence Systems
~~Clerical Prep Time:~~	Patent Family	WWW/Internet
Online Time: 75	Other	Other (specify)

PTO-1590 (8-01)

IN THE CLAIMS:

1. (currently amended) A compact, fiber reinforced rod for optical cables comprising:

a plurality of elongated fiber members encased in a matrix of a UV ~~curable~~ cured vinyl ester resin material; and

an outer topcoat layer substantially surrounding said ~~plurality of elongated fiber members~~ matrix.

2. (original) The reinforced rod of claim 1, wherein said elongated fiber members comprises an E-type glass fiber member.

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3. (original) The reinforced rod of claim 1, wherein said elongated fiber members comprises an S-type glass fiber member.

4. (original) The reinforced rod of claim 1, wherein said elongated fiber members are selected from the group consisting of E-type glass fiber members, an S-type glass fiber members, and combinations thereof.

5. (original) The reinforced rod of claim 1, wherein said elongated fiber members are selected from the group consisting of E-type glass fiber members, S-type glass fiber members, high strength synthetic strands of poly(p-phenylene-2,6-benzobisoxazole) fiber members, and combinations thereof.

6. (currently amended) The reinforced rod of claim 1, wherein said UV ~~curable~~ cured vinyl ester resin material is selected from the group consisting of Vinch 500 and 17-41B UV cured vinyl ester resin, both manufactured by Zeon Technologies.

7. (original) The reinforced rod of claim 1, wherein said outer topcoat layer comprises a polybutylene terephthalate/polyether glycol copolymer material.

8. (original) The reinforced rod of claim 1, wherein said outer topcoat layer comprises an ethylene acrylic acid copolymer material.

9. – 22. (canceled)

43
Dnt

23. (new) The reinforced rod of claim 1, wherein said plurality of fibers comprising:

a plurality of E-type glass roving fibers; and
a plurality of S-type glass roving fibers.

24. (new) The reinforced rod of claim 23, wherein said plurality of fibers further comprises a plurality of high strength synthetic strand members.

25. (new) The reinforced rod of claim 23, wherein said plurality of fibers further comprises a plurality of high strength aramid strands.

26. (new) The reinforced rod of claim 24, wherein said plurality of fibers further comprises a plurality of polyphenylene terephthalate strand members.

27. (new) The reinforced rod of claim 1, wherein said plurality of fibers comprises:

a plurality of E-type glass roving fibers;
a plurality of S-type glass roving fibers; and
a plurality of high strength aramid strands.

73
Ent

28. (new) The reinforced rod of claim 1, wherein said plurality of fibers comprises:

a plurality of E-type glass roving fibers;

a plurality of S-type glass roving fibers; and

a plurality of high strength polyphenylene terephthalate strands.

L6

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=> file reg
FILE 'REGISTRY' ENTERED AT 11:26:13 ON 28 OCT 2003
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2003 American Chemical Society (ACS)


=> display history full l1-


     FILE 'REGISTRY' ENTERED AT 09:50:17 ON 28 OCT 2003
                E POLY(P-PHENYLENE-2,6-BENZOBISOXAZOLE)/CN
L1            1 SEA "POLY(P-PHENYLENE-2,6-BENZOBISOXAZOLE)"/CN
                E POLYPHENYLENE TEREPHTHALATE/CN
                E POLYPHENYLENETEREPHTHALATE/CN
                E PHENYLENE TEREPHTHALATE POLYMER/CN
                E PHENYLENETEREPHTHALATE POLYMER/CN

     FILE 'HCA' ENTERED AT 10:05:21 ON 28 OCT 2003
L2            4 SEA (POLYPHENYLENE#(A)TEREPHTHALATE#)/IT
L3          103 SEA POLYPHENYLENE#(2A)TEREPHTHALATE#

     FILE 'REGISTRY' ENTERED AT 10:07:35 ON 28 OCT 2003
L4            1 SEA 26618-60-0
L5            1 SEA 26637-45-6
L6            2 SEA L4 OR L5

     FILE 'HCA' ENTERED AT 10:17:22 ON 28 OCT 2003
L7        46528 SEA OPTIC?(2A)(CABLE# OR CABLING# OR FIBER? OR FIBRE? OR
                FILAMENT? OR STRAND? OR RIBBON? OR THREAD? OR FILIFORM?)
L8        98217 SEA ROD OR RODS OR RODDED OR RODDING#
L9        14711 SEA ETYPE# OR E(2A)TYPE#
L10       15342 SEA STYPE# OR S(2A)TYPE#
L11         603 SEA L1 OR POLYPHENYLENEBENZOBISOXAZOLE# OR (POLYPHENYLENE
                # OR PHENYLENE#)(2A)(BENZOBISOXAZOLE# OR POLYBENZOBISOXAZ
                OLE#)
L12        9946 SEA ARAMID## OR POLYARAMID##
L13         377 SEA L6 OR POLYPHENYLENETEREPHTHALATE# OR (POLYPHENYLENE#
                OR PHENYLENE#)(2A)(TEREPHTHALATE# OR POLYTEREPHTHALATE#)
L14       23272 SEA ?VINYLESTER? OR (VINYL## OR POLYVINYL##)(2A)(ESTER?
                OR POLYESTER?) OR ?ESTERVINYL?
L15        2073 SEA L7 AND L8
L16          12 SEA L15 AND L14
L17           1 SEA L16 AND (L9 OR L10 OR L11 OR L12 OR L13)

     FILE 'REGISTRY' ENTERED AT 10:57:01 ON 28 OCT 2003
L18           1 SEA 9010-77-9
L19           1 SEA 106159-00-6
L20           1 SEA 518061-79-5
L21           1 SEA 518061-90-0

     FILE 'HCA' ENTERED AT 10:58:50 ON 28 OCT 2003
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L22            542 SEA L20 OR L20 OR VINCH# OR 17(W)(41 OR 41B) OR 1741B OR
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L23              1 SEA L22 AND L7
L24           4261 SEA L18
L25            845 SEA L19
L26             12 SEA L7 AND L24
L27              8 SEA L7 AND L25
L28              1 SEA L26 AND (L8 OR L9 OR L10 OR L11 OR L12 OR L13 OR
                   L14)
L29              1 SEA L26 AND L27
L30              1 SEA L27 AND (L8 OR L9 OR L10 OR L11 OR L12 OR L13 OR
                   L14)
L31             44 SEA L7 AND L14
L32             12 SEA L31 AND L8
L33              1 SEA L31 AND L9
L34              1 SEA L31 AND L10
L35              1 SEA L31 AND L11
L36              2 SEA L31 AND L12
L37            542 SEA L20 OR L21 OR VINCH# OR 17(W)(41 OR 41B) OR 1741B OR
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L38              1 SEA L31 AND L37
L39              1 SEA L31 AND L24
L40              1 SEA L31 AND L25
L41         721271 SEA MATRIX? OR MATRICE? OR LATTICE? OR SUPERLATTICE?
L42        1683114 SEA REINFORC? OR STRENGTH? OR STRONG?
L43         184581 SEA ELONGAT? OR LENGTHEN?
L44             27 SEA L31 AND (L41 OR L42 OR L43)
L45              3 SEA L17 OR L23 OR L33 OR L34 OR L35 OR L36 OR L38 OR L39
                   OR L40
L46             29 SEA (L16 OR L26 OR L27 OR L32) NOT L45
L47             22 SEA (L16 OR L26) NOT L45
L48             11 SEA (L16 OR L32) NOT L45
L49             18 SEA (L26 OR L27) NOT (L45 OR L48)
L50             13 SEA L44 NOT (L45 OR L48 OR L49)
L51          85930 SEA ((PHOTO OR LIGHT OR PHOTOLY?)(2A)(RX# OR RXN# OR
                   REACT? OR SENSITI? OR POLYM? OR CURE# OR CURING# OR
                   CURAB? OR CROSSLINK? OR CROSS(W)LINK? OR CAT# OR
                   CATALY?))/BI,AB
L52          95446 SEA ((ULTRAVIOLET? OR ULTRA(W)VIOLET? OR UV# OR SUV OR
                   LUV OR RADIA? OR IRRADIA? OR EMANAT? OR EMIT? OR EMISS?
                   OR LASER?)(2A)(RX# OR RXN# OR REACT? OR REACT? OR POLYM?
                   OR CURE# OR CURING# OR CURAB? OR CAT# OR CATALY? OR
                   CROSS(W)LINK? OR CROSSLINK?))/BI,AB
L53         152236 SEA (PHOTORX## OR PHOTOREACT? OR PHOTOSENS? OR PHOTOPOLYM
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                   PHOTOCAT?)/BI,AB
L54             14 SEA L31 AND (L51 OR L52 OR L53)
L55             11 SEA L54 NOT (L45 OR L48 OR L49 OR L40)


=> file hca
FILE 'HCA' ENTERED AT 11:26:27 ON 28 OCT 2003
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=> d l45 1-3 ibib abs hitstr hitind

L45 ANSWER 1 OF 3 HCA COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 138:339327 HCA
TITLE: Compact fiber-reinforced **rods** for **optical cable** reinforcements and method for making same
INVENTOR(S): Hager, Thomas P.; Lehman, Richard N.
PATENT ASSIGNEE(S): USA
SOURCE: U.S. Pat. Appl. Publ., 10 pp. CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003082380	A1	20030501	US 2001-3529	20011031
WO 2003037814	A2	20030508	WO 2002-US34810	20021030

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 2001-3529 A 20011031

AB A compact, fiber reinforced **rod** for **optical cables** comprises: a plurality of elongated fiber members encased in a matrix of a UV curable **vinyl ester** resin material; and an outer topcoat layer substantially surrounding the plurality of elongated fiber members. Fiber reinforcement **rods** having a combination of reinforcing fiber members coated with a UV curable **vinyl ester** resin material and a topcoat layer. The reinforcing fiber members may be **S-type** fiber members, **E-type** glass fiber members, a combination thereof, or **E-type** glass fiber members and/or **S-type** glass fiber members with high strength synthetic strands of poly(p-**phenylene** 2,6 **benzobisoxazole**) fiber members. The topcoat layer may be polybutylene terephthalate/polyether glycol or ethylene acrylic acid copolymer. The topcoat layer provides

enhanced properties of specific adhesion, enhanced environmental protection, resistance to surface fiber breakage, and to some degree resistance from delamination. The fiber reinforcement **rod** permits higher translation of strain energy due to reduced defects and residual stresses to allow a tougher and more resilient cured composite **rod** to be used. By varying the types of fibers and thickness of the UV coating or topcoat layer, a **fiber-optic cable** reinforcement **rod** member that is capable of having a wide variety of tensile strengths and moduli is realized.

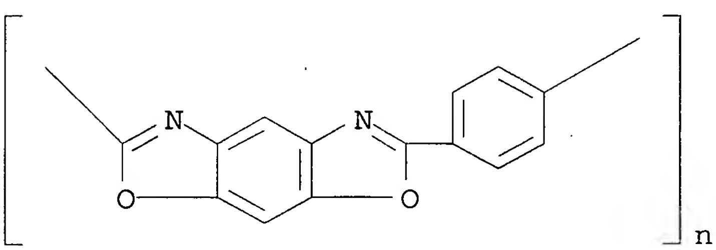
IT **518061-79-5**, **Vinch** 500 **518061-90-0**, **17-41B**
(compact fiber-reinforced **rods** for **optical cable** reinforcements and method for making same)

RN 518061-79-5 HCA
CN Vinch 500 (9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 518061-90-0 HCA
CN 17-41B (9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT **60871-72-9**, Poly(p-**phenylene**-2,6-**benzobisoxazole**)
(fiber; compact fiber-reinforced **rods** for **optical cable** reinforcements and method for making same)

RN 60871-72-9 HCA
CN Poly(benzo[1,2-d:5,4-d']bisoxazole-2,6-diyl-1,4-phenylene) (9CI) (CA INDEX NAME)

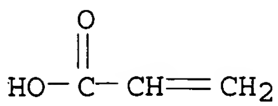


IT **9010-77-9**, Primacor 5990I
(outer topcoat layer; compact fiber-reinforced **rods** for **optical cable** reinforcements and method for making same)

RN 9010-77-9 HCA
CN 2-Propenoic acid, polymer with ethene (9CI) (CA INDEX NAME)

CM 1

CRN 79-10-7
CMF C3 H4 O2



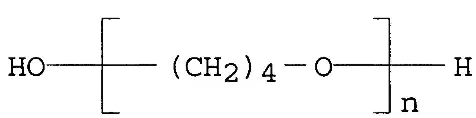
CM 2

CRN 74-85-1
CMF C2 H4

IT **106159-00-6**, Butanediol-polytetramethylene glycol-terephthalic acid, block copolymer
(rubber; compact fiber-reinforced **rods** for **optical cable** reinforcements and method for making same)
RN 106159-00-6 HCA
CN 1,4-Benzenedicarboxylic acid, polymer with 1,4-butanediol and .alpha.-hydro-.omega.-hydroxypoly(oxy-1,4-butanediyl), block (9CI) (CA INDEX NAME)

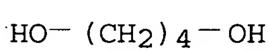
CM 1

CRN 25190-06-1
CMF (C4 H8 O)n H2 O
CCI PMS



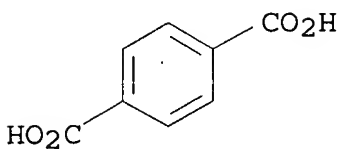
CM 2

CRN 110-63-4
CMF C4 H10 O2



CM 3

CRN 100-21-0
CMF C8 H6 O4



IC ICM D02G003-00
NCL 428375000; 385105000; 428297400; 428299400
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 57
ST **optical cable fiber** reinforced **rod**
IT Epoxy resins, uses
(acrylates; compact fiber-reinforced **rods** for **optical cable** reinforcements and method for making same)
IT Polyester rubber
Synthetic rubber, uses
(butanediol-polytetramethylene glycol-terephthalic acid, block, outer topcoat layer; compact fiber-reinforced **rods** for **optical cable** reinforcements and method for making same)
IT **Optical cables**
(compact **fiber**-reinforced **rods** for **optical cable** reinforcements and method for making same)
IT Glass fibers, uses
(compact fiber-reinforced **rods** for **optical cable** reinforcements and method for making same)
IT Polybenzoxazoles
(fiber, poly(benzobisoxazolediylphenylene); compact fiber-reinforced **rods** for **optical cable** reinforcements and method for making same)
IT Reinforced plastics
(fiber-reinforced; compact fiber-reinforced **rods** for **optical cable** reinforcements and method for making same)
IT Synthetic polymeric fibers, uses
(poly(benzobisoxazolediylphenylene); compact fiber-reinforced **rods** for **optical cable** reinforcements and method for making same)
IT **518061-79-5**, **Vinch** 500 **518061-90-0**, **17-41B**
(compact fiber-reinforced **rods** for **optical cable** reinforcements and method for making same)
IT **60871-72-9**, Poly(p-**phenylene**-2,6-**benzobisoxazole**)
(fiber; compact fiber-reinforced **rods** for **optical cable** reinforcements and method for making same)

IT **9010-77-9**, Primacor 5990I
(outer topcoat layer; compact fiber-reinforced **rods** for **optical cable** reinforcements and method for making same)
IT **106159-00-6**, Butanediol-polytetramethylene glycol-terephthalic acid, block copolymer
(rubber; compact fiber-reinforced **rods** for **optical cable** reinforcements and method for making same)

L45 ANSWER 2 OF 3 HCA COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 117:172790 HCA
TITLE: Manufacture of fiber-reinforced plastic linear materials for **optical fiber cables** and tire beads
INVENTOR(S): Takada, Takahisa; Kozuka, Kenji; Matsuno, Shigehiro
PATENT ASSIGNEE(S): Ube Nitto Kasei Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 04108132	A2	19920409	JP 1990-225140	19900829
JP 3058897	B2	20000704		

PRIORITY APPLN. INFO.: JP 1990-225140 19900829

AB The title materials are prepd. by impregnating long reinforcing fibers with UV-curable thermosetting resins having viscosity (.eta.) .ltoreq.100 cP, passing the fibers through a nozzle, and then exposing the fibers to UV ray. Schematic diagrams of the process are illustrated. Thus, glass fiber strands were impregnated with a compn. (.eta. 59 cP) comprising Estar H-2000 (**vinyl ester** resin) 60, Kayarad HDDA (hexanediol diacrylate) 20, and N-vinylpyrrolidone 20 parts, passed through a nozzle, and exposed to UV ray to give linear materials without constricted portion, in contrast to materials prepd. using a resin compn. with .eta. 220 cP.
IC ICM D02G003-40
ICS B29C067-14; D02G003-22; D02G003-44; D06M010-10; D06M015-19; D06M015-70
ICA D07B005-00; D07B007-14; G02B006-44
ICI B29K105-08
CC 37-6 (Plastics Manufacture and Processing)
Section cross-reference(s): 39
ST glass fiber reinforced thermosetting plastic; **aramid** fiber reinforced thermosetting plastic; **optical fiber cable** reinforced plastic; tire bead fiber reinforced plastic
IT Glass fibers, uses

(thermosetting resins reinforced with, for **optical fiber cables** and tire beads)

IT Polyamide fibers, uses
(**aramid**, thermosetting resins reinforced with, for **optical fiber cables** and tire beads)

IT Communication
(**optical**, **cables**, **fiber**-reinforced thermosetting resin linear materials for)

IT 24938-64-5, Kevlar 49
(fiber, thermosetting resins reinforced with, for **optical fiber cables** and tire beads)

IT 143907-17-9
(reinforced with glass **fibers**, linear, for **optical fiber cables** and tire beads)

L45 ANSWER 3 OF 3 HCA COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 103:7408 HCA
TITLE: A preliminary study about the production by the pultrusion technique of a fiber reinforced plastic (FRP) tension member for use in dielectric composite **optical fiber** communication **cable**
AUTHOR(S): Kiekens, P.
CORPORATE SOURCE: Lab. Meulemeester Technol., Rijksuniv. Gent, Ghent, B-9000, Belg.
SOURCE: Bulletin des Societes Chimiques Belges (1985), 94(3), 165-70
CODEN: BSCBAG; ISSN: 0037-9646
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The advantages and disadvantages are discussed for carbon, **aramide**, and glass fibers as reinforcing fibers and unsatd. **polyester**, **vinyl ester**, and epoxy resins as matrix resins in the manuf. by pultrusion of the strength or tension member of an **optical fiber** telecommunication **cable**.

CC 38-3 (Plastics Fabrication and Uses)

ST pultrusion tension member **optical cable**; carbon **fiber optical cable**; **aramid fiber optical cable**; glass **fiber** pultrusion **optical cable**; epoxy pultrusion **optical cable**; polyester pultrusion **optical cable**; vinyl resin pultrusion **optical cable**

IT **Fiber optics**
(**cables** for, pultrusion in manuf. of tension member for)

IT Epoxy resins, uses and miscellaneous
Polyesters, uses and miscellaneous
(fiber-reinforced, manuf. of, by pultrusion, for strength member in **optical cables**)

IT Carbon fibers

(plastics reinforced by, manuf. of, by pultrusion, for strength member in **optical cable**)

IT Glass fibers, uses and miscellaneous
(plastics reinforced by, manuf. of, by pultrusion, for strength member in **optical fiber** communication **cables**)

IT Polyamide fibers, uses and miscellaneous
(**aramid**, plastics reinforced with, manuf. of, by pultrusion, for strength member in **optical cable**)

IT Molding of plastics and rubbers
(pultrusion, of strength member for **optical cables**)

=> d l48 1-11 cbib abs hitstr hitind

L48 ANSWER 1 OF 11 HCA COPYRIGHT 2003 ACS on STN

138:205680 Fundamental study of **optical fibers** as the reinforcement in FRP. Ohsawa, Isamu; Kimpara, Isao; Kageyama, Kazuro; Suzuki, Toshio; Kanai, Makoto (Department of Environmental and Ocean Engineering, Graduate School of Engineering, The University of Tokyo, Bunkyo-ku, Tokyo, 113-8656, Japan). Proceedings of the Asian-Australasian Conference on Composite Materials (ACCM-2000) "Composites Technologies for the New Millennium", 2nd, Kyongju, Republic of Korea, Aug. 18-20, 2000, Volume 2, 1109-1114. Editor(s): Hong, Chang-Sun; Kim, Chun-Gon. Korean Society for Composite Materials: Taejon, S. Korea. ISBN: 89-951567-0-8 (English) 2000. CODEN: 69DBJU.

AB The tensile strength and tensile modulus of spent **optical fibers** with and without plastic coating were studied to assess viability of recycling them into polymeric composites, e.g., FRP [fiber reinforced plastics]. The interfacial interactions between fibers and plastic coating and also between the coating and matrix resin were significantly affected by the condition of the plastic coating. The strength of **optical fibers** with plastic coating which was sintered in air and the interfacial bonding strength between the sintered plastic coating and matrix resin increased, compared to fibers for which the plastic coating was not sintered. The mech. failure of composites with non-sintered coated fibers was five times greater than that of sintered coating fiber composites. Sintered-coating **optical fibers** were used in high-vol. fraction composites with a **vinyl ester** resin contg. $CaCO_3$ processed by pultrusion into **rod** test specimens.

CC 37-5 (Plastics Manufacture and Processing)

ST **optical fiber** waste tensile strength modulus coating sintering effect; composite **optical fiber** interfacial bonding sintered plastic coating; **vinyl ester** resin composite **optical fiber** recycling vol fraction

IT Epoxy resins, properties

(acrylates, glass fiber composites; role of high vol. fraction of **optical fibers** on Young's modulus of **vinyl ester** resin composites)

IT Plastics, uses
(coatings on **optical fibers**; effect of sintered plastic coating on tensile properties of spent **optical fibers** toward use in composites)

IT Coating materials
Optical fibers
Recycling
Sintering
Tensile strength
(effect of sintered plastic coating on tensile properties of spent **optical fibers** toward use in composites)

IT Reinforced plastics
(fiber-reinforced; role of high vol. fraction of **optical fibers** on Young's modulus of **vinyl ester** resin composites)

IT Extrusion of plastics and rubbers
(pultrusion; role of high vol. fraction of **optical fibers** on Young's modulus of **vinyl ester** resin composites)

IT Young's modulus
(role of high vol. fraction of **optical fibers** on Young's modulus of **vinyl ester** resin composites)

L48 ANSWER 2 OF 11 HCA COPYRIGHT 2003 ACS on STN
132:208782 Pultruded smart composites incorporating **fiber optic** sensors. Kalamkarov, Alexander L. (Department of Mechanical Engineering, Dalhousie University, Halifax, NS, B3J 2X4, Can.). Advances in Science and Technology (Faenza, Italy), 25(Smart Materials Systems), 117-124 (English) 1999. CODEN: ASETE5. Publisher: Techna.

AB The issues of processing, evaluation and exptl. testing of smart fiber reinforced polymer (FRP) composite materials are discussed. The specific application in view is the use of smart composite reinforcements for a real-time monitoring of structures. The pultrusion technol. for the fabrication of FRP composites with embedded **fiber optic** sensors (Fabry-Perot and Bragg Grating) is developed. The **optical fiber** /composite interaction is studied. The tensile and shear properties of the pultruded carbon/**vinyl ester** and glass/ **vinyl ester rods** with and without **optical fibers** are detd. The microstructural anal. of the smart pultruded FRP is carried out. The interfaces between the resin matrix and the acrylate and polyimide coated **optical fibers** are examd. and interpreted in terms of coating's ability to resist high temp. and its compatibility with resin matrix. The strain monitoring inside the pultrusion die during the processing of smart FRP parts is performed using the

fiber optic sensors. The strain readings from the sensors and the extensometer are compared in mech. tests.

CC 38-2 (Plastics Fabrication and Uses)

ST **optical fiber** sensor pultrusion reinforced plastic

IT Acrylic polymers, uses
Polyimides, uses
(coatings on **optical fibers**; pultrusion of smart fiber-reinforced plastic composites incorporating **fiber optic** sensors)

IT Carbon fibers, uses
(composites; pultruded smart fiber-reinforced plastic composites incorporating **fiber optic** sensors)

IT Reinforced plastics
(fiber-reinforced; pultruded smart fiber-reinforced plastic composites incorporating **fiber optic** sensors)

IT Coating materials
(on **optical fibers**; pultrusion of smart fiber-reinforced plastic composites incorporating **fiber optic** sensors)

IT **Optical fibers**
Sensors
Smart materials
(pultruded smart fiber-reinforced plastic composites incorporating **fiber optic** sensors)

IT Phenolic resins, uses
(pultruded smart fiber-reinforced plastic composites incorporating **fiber optic** sensors)

IT Extrusion of plastics and rubbers
(pultrusion; pultruded smart fiber-reinforced plastic composites incorporating **fiber optic** sensors)

L48 ANSWER 3 OF 11 HCA COPYRIGHT 2003 ACS on STN

131:229427 On the processing and testing of smart composite reinforcements. Kalamkarov, A. L. (Department of Mechanical Engineering, Dalhousie University, Halifax, NS, B3J 2X4, Can.). ECCM-8, European Conference on Composite Materials: Science, Technologies and Applications, 8th, Naples, June 3-6, 1998, Volume 3, 341-348. Editor(s): Crivelli Visconti, I. Woodhead: Cambridge, UK. (English) 1998. CODEN: 67UYAP.

AB The issues of processing and exptl. testing of smart fiber-reinforced polymer (FRP) composite reinforcements are discussed. The pultrusion technol. for the fabrication of FRP composites with embedded **fiber optic** sensors (Fabry-Perot and Bragg Grating) is developed. The tensile and shear properties of the pultruded carbon-**vinyl ester** and glass-**vinyl ester rods** with and without **optical fibers** are detd. The microstructural anal. of the smart pultruded FRP is carried out by using Scanning Electron Microscope. The interfaces between the resin matrix and the acrylate and polyimide coated **optical fibers** are examd. and interpreted in terms of coating's

ability to resist high temp. and its compatibility with resin matrix. The strain monitoring inside the pultrusion die during the processing of smart FRP parts is performed using the **fiber optic** sensors. The strain readings from the sensors and the extensometer are compared in mech. tensile tests.

CC 37-5 (Plastics Manufacture and Processing)

ST **vinyl ester** resin smart composite reinforcement; pultrusion **fiber optic** sensor composite; carbon fiber **vinyl ester** resin composite; glass fiber **vinyl ester** resin composite.

IT Epoxy resins, properties
(acrylates; pultrusion and testing of fiber-reinforced **vinyl ester** resin composite with embedded **fiber optic** sensors)

IT Polyimides, uses
(**optical fiber** coated with; pultrusion and testing of fiber-reinforced **vinyl ester** resin composite with embedded **fiber optic** sensors)

IT **Fiber optic** sensors
(pultrusion and testing of fiber-reinforced **vinyl ester** resin composite with embedded **fiber optic** sensors)

IT Carbon fibers, uses
Glass fibers, uses
(pultrusion and testing of fiber-reinforced **vinyl ester** resin composite with embedded **fiber optic** sensors)

IT Polyurethanes, uses
(pultrusion of fiber-reinforced **vinyl ester** resin modified with)

IT Extrusion of plastics and rubbers
(pultrusion; pultrusion and testing of fiber-reinforced **vinyl ester** resin composite with embedded **fiber optic** sensors)

L48 ANSWER 4 OF 11 HCA COPYRIGHT 2003 ACS on STN

130:197504 On the processing and testing of FRP composites incorporating **fiber optic** sensors. Kalamkarov, Alexander L.; Fitzgerald, Stephen B.; MacDonald, Douglas O.; Georgiades, Anastasis V. (Department of Mechanical Engineering, Dalhousie University, Nova Scotia, B3J 2X4, Can.). Design and Manufacturing of Composites, Proceedings of the Joint Canada-Japan Workshop on Composites, 2nd, Quebec, Aug. 19-21, 1998, 114-121. Editor(s): Hoa, S. V.; Hamada, H. Technomic: Lancaster, Pa. (English) 1998. CODEN: 67FDAN.

AB The use of the pultrusion process for the manuf. of fiber reinforced polymer (FRP) composites with embedded **fiber optic** sensors is discussed. The specific application is the use of smart composite reinforcements for strain monitoring in engineering structures. The Bragg Grating and Fabry Perot **fiber optic** sensors are embedded during the pultrusion of FRP **rods** and the process induced residual strains are evaluated using these sensors. The behavior of optic sensors during

pultrusion is assessed, and the effect of the embedding of **optical fibers** and their surface coatings on the mech. properties of the composite is investigated. Monitoring of the output of embedded **fiber optic** strain sensors during the pultrusion of composite **rods** gives a unique view of the formation of residual strains within the pultrusion die itself. To verify the operation of the optic sensors embedded in the smart pultruded tendons, mech. tests were conducted and the output of the **fiber optic** sensors was compared to that of an extensometer during quasi-static and cyclic tensile tests.

CC 38-2 (Plastics Fabrication and Uses)
Section cross-reference(s): 37

ST **fiber optic** sensor pultrusion composite; **vinyl ester** resin urethane modified composite; glass fiber composite pultrusion testing; carbon fiber composite pultrusion testing

IT **Fiber optic** sensors
(Fabry-Perot and Bragg grating; in pultrusion and testing of urethane-modified **vinyl ester** resin composites)

IT Epoxy resins, uses
(acrylates, urethane-modified; carbon and glass fiber-reinforced; pultrusion and testing of composites incorporating **fiber optic** sensors)

IT Extrusion of plastics and rubbers
(pultrusion; processing and testing of composites incorporating **fiber optic** sensors)

IT Strain
(residual; in pultrusion and testing of urethane-modified **vinyl ester** resin composites)

IT Polyimides, uses
(surface coatings on **optical fibers** for study of pultrusion of composites)

IT Carbon fibers, uses
Glass fibers, uses
(urethane-modified **vinyl ester** resins reinforced by; pultrusion and testing of composites incorporating **fiber optic** sensors)

L48 ANSWER 5 OF 11 HCA COPYRIGHT 2003 ACS on STN

130:154519 On the processing and characterization of smart composite reinforcement. Kalamkarov, Alexander L.; Fitzgerald, Stephen B.; MacDonald, Douglas O.; Georgiades, Anastasis V. (Department of Mechanical Engineering, Dalhousie University, Halifax, NS, B3J 2X4, Can.). Proceedings of SPIE-The International Society for Optical Engineering, 3324(Smart Materials Technologies), 290-300 (English) 1998. CODEN: PSISDG. ISSN: 0277-786X. Publisher: SPIE-The International Society for Optical Engineering.

AB The issues of processing and characterization of pultruded smart composite reinforcements with embedded **fiber optic** sensors are discussed. These fiber-reinforced polymer (FRP)

reinforcements incorporate the **optical fiber** sensors to provide strain monitoring of structures. The required modification of the pultrusion processing technol. to allow for the incorporation of **fiber optic** sensors is developed. Fabry Perot and Bragg Grating optical strain sensors were chosen due to their small size and excellent sensitivity. The small diam. of the sensor and **optical fiber** allow them to be embedded without adversely affecting the strength of the composite. Two types of reinforcement with **vinyl ester** resin were used to produce the exptl. 9.5 mm diam. **rods**. The reinforcements were carbon and E-glass fibers. To fully characterize the pultrusion process, the strain sensors were subjected sep. to each of the variables pertinent to the pultrusion process. Thus, sensors were used to monitor strain caused by compaction pressure in the die, compaction pressure plus std. temp. profile, and finally compaction pressure plus temp. plus resin cure (complete pultrusion process). A strain profile was recorded for each expt. as the sensor travelled through the pultrusion die, and for the cool-down period after the sensor had exited the die.

CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 37, 40

ST pultrusion smart composite **optical fiber** strain sensor

IT Smart materials
(processing and characterization of smart composite reinforcement in relation to pultrusion and **optical fiber** strain sensors)

IT Carbon fibers, uses
Glass fibers, uses
(processing and characterization of smart composite reinforcement in relation to pultrusion and **optical fiber** strain sensors)

IT Extrusion of plastics and rubbers
(pultrusion; processing and characterization of smart composite reinforcement in relation to pultrusion and **optical fiber** strain sensors)

IT Strain
(sensors; processing and characterization of smart composite reinforcement in relation to pultrusion and **optical fiber** strain sensors)

IT **Optical fibers**
(strain sensors; processing and characterization of smart composite reinforcement in relation to pultrusion and **optical fiber** strain sensors)

IT Sensors
(strain; processing and characterization of smart composite reinforcement in relation to pultrusion and **optical fiber** strain sensors)

IT 557-75-5D, **Vinyl** alcohol, **esters**, polymers
(processing and characterization of smart composite reinforcement in relation to pultrusion and **optical fiber**

strain sensors)

L48 ANSWER 6 OF 11 HCA COPYRIGHT 2003 ACS on STN
128:180983 Fabrication and testing of smart FRP reinforcements.
Kalamkarov, Alexander L.; Macdonald, Douglas O. (Department of Mechanical Engineering, Technical University of Nova Scotia, Halifax, NS, B3J 2X4, Can.). International Conference on Composite Materials, Proceedings, 11th, Gold Coast, Australia, July 14-18, 1997, Volume 6, 571-581. Editor(s): Scott, Murray L. Australian Composite Structures Society: Melbourne, Australia. (English) 1997. CODEN: 65TEAE.

AB A fabrication technol. was developed for manuf. of smart FRP [fiberglass reinforced plastic] composites with embedded **optical fibers**, including construction of a pultruder. The composites comprised a resin system of urethane modified bisphenol **vinyl ester**, which has excellent mech. properties, low viscosity, and high pulling rate, E-glass fibers and carbon **fibers**, and the **optical fibers** were a polyimide coated single mode of 155 .mu.m overall diam. or a multi-mode fiber with overall diam. of 250 .mu.m, which contained a UV-cured acrylate surface coating. The microstructure of the composites was studied and the composites were subjected to testing. Pultruded carbon reinforced **rods** with and without **optical fiber** showed higher shear and tensile strength, and greater tensile modulus than glass fiber **rods**. The embedded **optical fibers** do not have a significant effect on the tensile properties of pultruded **rods**, but they slightly affected the shear strength of the glass fiber **rods**. The polyimide coating on the **optical fiber** is a good interface between **optical fiber** and host material, whereas the acrylate coating cannot withstand the high temp. of pultrusion and leads to severe debonding of **optical fiber** and resin.

CC 37-5 (Plastics Manufacture and Processing)
Section cross-reference(s): 38, 73

ST polyimide coated **optical fiber** smart composite; glass fiber **vinyl ester** smart composite; carbon **fiber** polyester **optical fiber** composite; tensile strength pultruded **rod** smart FRP

IT Glass fibers, properties
(E-glass; microstructure and tensile properties of smart composite pultruded **rods** with embedded **optical fiber**)

IT Reinforced plastics
(carbon fiber-reinforced; microstructure and tensile properties of smart composite pultruded **rods** with embedded **optical fiber**)

IT Reinforced plastics
(glass fiber-reinforced; microstructure and tensile properties of smart composite pultruded **rods** with embedded **optical fiber**)

IT Adhesion, physical
(interfacial; microstructure and tensile properties of smart composite pultruded **rods** with embedded **optical fiber**)

IT Interface
Optical fibers
Shear strength
Young's modulus
(microstructure and tensile properties of smart composite pultruded **rods** with embedded **optical fiber**)

IT Carbon fibers, properties
(microstructure and tensile properties of smart composite pultruded **rods** with embedded **optical fiber**)

IT Extrusion of plastics and rubbers
(pultrusion; microstructure and tensile properties of smart composite pultruded **rods** with embedded **optical fiber**)

IT Acrylic polymers, uses
Polyimides, uses
(surface coating; microstructure and tensile properties of smart composite pultruded **rods** with embedded **optical fiber**)

IT **Polyesters**, properties
(**vinyl** group-contg., bisphenol, urethane-modified; microstructure and tensile properties of smart composite pultruded **rods** with embedded **optical fiber**)

L48 ANSWER 7 OF 11 HCA COPYRIGHT 2003 ACS on STN
128:115671 Experimental and analytical studies of smart composite reinforcement. Kalamkarov, A. L.; Liu, H. Q.; MacDonald, D. O. (Dep. Mech. Eng., Tech. Univ. Nova Scotia, Halifax, NS, B3J 2X4, Can.). Composites, Part B: Engineering, Volume Date 1998, 29B(1), 21-30 (English) 1997. CODEN: CPBEFF. ISSN: 1359-8368. Publisher: Elsevier Science Ltd..

AB A lab. scale pultrusion process was developed to fabricate smart fiber-reinforced polymer (FRP) materials. The shear and tensile properties, i.e., strength and modulus, of the pultruded carbon/ **vinyl ester** and glass/**vinyl ester rods** with and without **optical fibers** were detd. Microstructural anal. of the smart pultruded FRP was carried out using the optical microscope and scanning electron microscope. The interfaces between the resin matrix and the acrylate and polyimide-coated **optical fibers** were examd. and interpreted in terms of the coating's ability to resist high temp. and its compatibility with resin matrix. A micromech. model of composite material, taking into account the misorientation of fibers, was developed and the corresponding constitutive equation was derived. The effect of small fiber misorientation angle on the tensile and shear effective

moduli of composite material was investigated. The micro stress heterogeneity in fibers and matrix of composite was analyzed.

CC 37-5 (Plastics Manufacture and Processing)
Section cross-reference(s): 38

ST smart composite reinforcement pultrusion; **vinyl ester** resin fiber reinforced pultrusion; glass fiber **vinyl ester** resin reinforcement; carbon fiber **vinyl ester** resin reinforcement; **optical fiber vinyl ester** resin reinforcement

IT Polyimides, uses
(coatings on fibers; exptl. and anal. methods for processing , testing, and modeling of fiber-reinforced polymer composites with embedded **optical fibers**)

IT **Vinyl** compounds, properties
(**ester** group-contg., polymers; exptl. and anal. methods for processing , testing, and modeling of fiber-reinforced polymer composites with embedded **optical fibers**)

IT **Optical fibers**
Shear
Stress, mechanical
(exptl. and anal. methods for processing , testing, and modeling of fiber-reinforced polymer composites with embedded **optical fibers**)

IT Carbon fibers, properties
Glass fibers, properties
(exptl. and anal. methods for processing , testing, and modeling of fiber-reinforced polymer composites with embedded **optical fibers**)

IT Coating materials
(polyimides, for fibers; exptl. and anal. methods for processing , testing, and modeling of fiber-reinforced polymer composites with embedded **optical fibers**)

IT Extrusion of plastics and rubbers
(pultrusion; exptl. and anal. methods for processing , testing, and modeling of fiber-reinforced polymer composites with embedded **optical fibers**)

L48 ANSWER 8 OF 11 HCA COPYRIGHT 2003 ACS on STN

127:109868 Pultrusion of smart FRP composites. Kalamkarov, Alexander L.; Macdonald, Douglas O.; Westhaver, Paul A.D. (Department of Mechanical Engineering, Technical University of Nova Scotia, Halifax, NS, B3J 2X4, Can.). Proceedings of SPIE-The International Society for Optical Engineering, 3042(Smart Sensing, Processing, and Instrumentation), 400-409 (English) 1997. CODEN: PSISDG. ISSN: 0277-786X. Publisher: SPIE-The International Society for Optical Engineering.

AB A lab. scale pultrusion process has been developed to fabricate smart fiber reinforced plastic (FRP) materials. Microstructural analyses of the smart pultruded FRP was carried out using both an optical microscope and a Scanning Electron Microscope (SEM). The tensile properties and shear strength, i.e. modulus and strength, of

pultruded carbon/**vinylester** and glass/**vinylester**
rods were detd. through mech. testing. Testing was carried
out on baseline pultruded samples, as well as those contg. one and
two embedded **optical fibers**. The pultruded
carbon reinforced **rods** with and without **optical**
fiber showed higher shear and tensile strength, as well as
greater tensile modulus than did the glass fiber analog. An
embedded **optical fiber** did not have a
significant effect upon the tensile properties of either glass or
carbon pultruded FRP **rod**, but it slightly affected the
shear strength of the glass fiber **rods**. Increased nos. of
embedded **optical fibers** in the FRP **rods**
had a more pronounced influence upon the shear strength. The
interfaces between the resin matrix and the buffer coating on the
optical fibers were examd. and interpreted in
terms of the coatings ability to resist high temps. and its
compatibility with resin matrix. Polyimide buffers proved to be
superior to acrylate buffers.

CC 38-3 (Plastics Fabrication and Uses)

ST pultrusion smart fiber reinforced plastic prepn; **optic**
fiber reinforced plastic property

IT **Optical fibers**
(pultrusion of smart FRP composites)

IT **Polyesters**, uses
(**vinyl** group-contg., urethane-modified; pultrusion of
smart FRP composites)

L48 ANSWER 9 OF 11 HCA COPYRIGHT 2003 ACS on STN

127:96135 On the processing of smart FRP reinforcements. Kalamkarov,
Alexander L.; Macdonald, Douglas O. (Department of Mechanical
Engineering, Technical University of Nova Scotia, Halifax, NS, B3J
2X4, Can.). International SAMPE Symposium and Exhibition,
42(Evolving Technologies for the Competitive Edge, Book 2), 939-946
(English) 1997. CODEN: ISSEEG. ISSN: 0891-0138. Publisher:
Society for the Advancement of Material and Process Engineering.

AB The design and processing issues, as well as evaluation and exptl.
testing of smart FRP composite reinforcements, are discussed. The
specific application in view is the use of smart reinforcements for
innovative concrete bridge structures. The technol. for the
fabrication of fiber-reinforced polymer composites with embedded
fiber optic sensors is developed. Smart
composites are produced by a custom-built pultruder. It is shown
that the embedded **optical fibers** do not have
significant effect on the tensile properties of pultruded FRP, but
they slightly deteriorate the shear strength of composites. The
optical and SEM microscopic examns. of the FRP **rods**
incorporating **optical fibers** were performed.
The following observations were clearly visible on the SEM
micrographs: good distribution of fiber reinforcement in resin
matrix; debonding between acrylate-coated **optical**
fiber and host materials; excellent interfaces between
polyimide-coated **optical fiber** and host

materials; and debonding between reinforcing fiber and **vinylester** matrix shown on the fracture surfaces. This examn. shows that a polyimide coating on **optical fiber** results in a good interface between **optical fiber** and host material, whereas acrylate coating cannot withstand the high prodn. temp. and causes severe debonding of **optical fiber** and resin.

CC 38-2 (Plastics Fabrication and Uses)

ST smart **optical fiber** reinforced plastic; polymer processing smart fiber strength

IT Coupling agents
Optical fibers
(processing of smart fiber-reinforced polymers)

117:28816 Manufacture of reinforced plastic-coated cables. Matsuno, Shigehiro; Kozuka, Kenji; Naito, Minoru; Yasuda, Kazuo (Ube Nitto Kasei K. K., Japan). Jpn. Kokai Tokkyo Koho JP 04045914 A2 19920214 Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1990-153875 19900614.

AB A **cable**, e.g. **optical fiber cable**, is protected by surrounding the cable with several **rod**-like materials (A) which comprise thermoplastic outer layers (e.g., LDPE) and fiber (glass fiber)-reinforced uncured thermosetting resin (e.g., H 2000 **vinyl ester** resin) inner layers, filling waterproof gels [e.g. DAPHNE (silicone)] in between the A and on exterior parts of A, followed by covering the A-surrounded core with thermoplastic resins (e.g. NuCG 0588 BK), cooling, and heating to cure the most exterior resins and interior H 2000.

IC ICM B29C047-02
ICS C03C025-02; G02B006-44; H01B007-28; H01B013-22

CC 42-2 (Coatings, Inks, and Related Products)
Section cross-reference(s): 73

ST **optical fiber cable** coating process; crosslinking coating **optical fiber cable**

IT Coating process
(bilayered **rod**-like fiber-reinforced thermosetting resins, for **optical fiber cables**)

IT Siloxanes and Silicones, uses
(gel, fillers between fiber-reinforced resin **rod**-like coatings, for **optical fiber cables**)

IT Glass fibers, uses
(**vinyl ester** resin reinforced with, for bilayered **rod**-like coatings for **optical fiber cables**, crosslinking of)

IT 105478-38-4, H 2000
(glass fiber-reinforced, for bilayered **rod**-like coatings for **optical fiber cables**, crosslinking of)

IT 9002-88-4, LDPE
(on fiber-reinforced resin **rods**, as coatings for

optical fiber cables, crosslinking
of)

L48 ANSWER 11 OF 11 HCA
110:59005 Improved reliability of **fiber optic**
overhead **cables** with an application of fiber-reinforced
plastic **rods** with S2 glass. Hoevel, Albert (Philips
Kommun. Ind. A.-G., Cologne, D-5000/80, Fed. Rep. Ger.).
Proceedings of International Wire and Cable Symposium, 35th, 271-8
(English) 1986. CODEN: PIWSDG. ISSN: 0091-7702.

AB Glass fiber-reinforced plastics (FRP) **rods** are used as
strength members in the title cables because of their low wt. and
their indifference to electromagnetic influence. After 2-yr field
tests, a strength redn. (.apprx.20%) of FRP **rods**, caused
by acid rain entering through some damages in the sheath, was obsd.
This strength redn. could be simulated in lab. tests by soaking FRP
rods under bending strain in room-temp. acid soln. A
comparison of E-, R-, and S2-glass **rods** at 0.5% elongation
showed a 200 times longer durability for R- and S2-glass
rods. **Optical** overhead **cables** with an
armouring of FRP **rods** contg. R- or S2-glass showed
significant improvement in performance.

CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 37

ST overhead **optical cable** reinforced plastics;
glass **fiber** plastics **optical cable**

IT Polyesters, uses and miscellaneous
(glass fiber-reinforced, for improved reliability of
fiber optic overhead **cables**)

IT Glass fibers, uses and miscellaneous
(plastics reinforced with S2, **rods**, for improved
reliability of **fiber optic** overhead
cables)

IT Rain
(acid, strength properties of glass fiber-reinforced plastic
rods in **fiber optic** overhead
cables in presence of)

IT Epoxy resins, uses and miscellaneous
(bisphenol A-epichlorohydrin, glass fiber-reinforced, for
improved reliability of **fiber optic** overhead
cables)

IT **Vinyl** compounds, polymers
(**ester** group-contg., polymers, glass fiber-reinforced,
for improved reliability of **fiber optic**
overhead **cables**)

IT Plastics, reinforced
(glass fiber-, **rods**, for improved reliability of
fiber optic overhead **cables**)

IT Communication
(**optical**, **cables**, overhead, glass
fiber-reinforced plastic **rods** for improved reliability
of)

IT 79-10-7D, Acrylic acid, polymers with bisphenol A derivs.
80-05-7D, Bisphenol A, derivs., polymers with acrylic acid
(glass fiber-reinforced **rods**, for improved reliability of **fiber optic** overhead **cables**)

IT 25068-38-6, Bisphenol A-epichlorohydrin copolymer
(glass fiber-reinforced, for improved reliability of **fiber optic** overhead **cables**)

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L49 ANSWER 1 OF 18 HCA COPYRIGHT 2003 ACS on STN

137:170641 Fire-resistant laminated sheets and flat cables using them. Ishizuka, Yutaka (Dainippon Ink and Chemicals, Inc., Japan). Jpn. Kokai Tokkyo Koho JP 2002234118 A2 20020820, 11 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-336394 20011101. PRIORITY: JP 2000-369992 20001205.

AB The sheets comprise (A) resin layers and (B) fire-resistant resin layers comprising .gtoreq.1 polymers chosen from polyamide elastomers, fatty acid polymer polyamides, polyamides, ethylene-vinyl acetate-vinyl alc. copolymer (I), ethylene-vinyl alc. copolymer, and thermoplastic polyester and polyurethane elastomers and N- or P-contg. flame retardants. The sheets show high fire resistance, low toxic gas generation on burning, low ash content, and good mech. properties. Thus, Emblet S 50 (PET film) was laminated with a compn. comprising TPAE 8 (polyamide elastomer) 20, PA 260 (fatty acid polymer polyamide) 20, Daiamid L 2140 (nylon 12) 20, Technolink K 431 (I) 10, and MC 610 (melamine cyanurate) 30 parts to give a fire-resistant sheet.

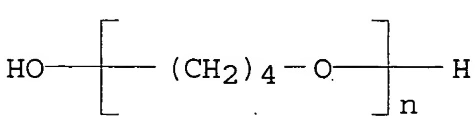
IT **106159-00-6**, Butanediol-polytetramethylene glycol-terephthalic acid block copolymer
(rubber, fire-resistant layer; fire-resistant laminated sheets for flat cables)

RN 106159-00-6 HCA

CN 1,4-Benzenedicarboxylic acid, polymer with 1,4-butanediol and .alpha.-hydro-.omega.-hydroxypoly(oxy-1,4-butanediyl), block (9CI) (CA INDEX NAME)

CM 1

CRN 25190-06-1
CMF (C4 H8 O)n H2 O
CCI PMS



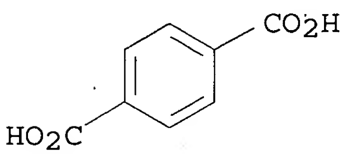
CM 2

CRN 110-63-4
CMF C4 H10 O2

HO— $(CH_2)_4$ —OH

CM 3

CRN 100-21-0
CMF C8 H6 O4

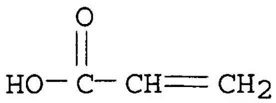


IC ICM B32B027-18
ICS C08K005-16; C08K005-521; C08L101-00; G02B006-44; H01B003-30; H01B003-42; H01B007-08; H01B007-295; H01B017-60; H01B011-00
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 73, 76
IT Electric cables
Fire-resistant materials
Optical cables
(fire-resistant laminated sheets for flat cables)
IT **106159-00-6**, Butanediol-polytetramethylene glycol-terephthalic acid block copolymer
(rubber, fire-resistant layer; fire-resistant laminated sheets for flat cables)

L49 ANSWER 2 OF 18 HCA COPYRIGHT 2003 ACS on STN
136:402893 Polyethylene-based undersea **optical fiber cable** coverings with good resistance to tensile and bending stress. Ishioka, Mitsugu (Nippon Polychemicals Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2002156567 A2 20020531, 9 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-354587 20001121.
AB Title cable covering material with good elec. properties and at low costs comprises (A) an adhesive layer (e.g., ethylene-vinyltrimethoxysilane copolymer Linklon XF 800T) of thickness 0.01-1 mm on the pressure-resistant metal pipe (e.g., copper) of the cable, and (B) .gtoreq.1 insulating layer contg. high-pressure low-d. polyethylene (e.g., HE-30).
IT **9010-77-9**, Yukalon EAA A 201K
(as adhesive layer for undersea **optical fiber cable** covering with good resistance to tensile and bending stress)
RN 9010-77-9 HCA
CN 2-Propenoic acid, polymer with ethene (9CI) (CA INDEX NAME)

CM 1

CRN 79-10-7
CMF C3 H4 O2



CM 2

CRN 74-85-1
CMF C2 H4

IC ICM G02B006-44
ICS C08F210-02; C08F220-06; C08F222-02; C08F222-06; C08F230-08; C08F255-00; C09J123-26; C09J133-00; C09J135-00; C09J143-04; C09J151-06
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 73
ST high pressure low density polyethylene undersea **cable optical fiber**; ethylene vinyltrimethoxysilane copolymer adhesive layer undersea **cable optical fiber**
IT Polymer blends
(as adhesive layer for undersea **optical fiber cable** covering with good resistance to tensile and bending stress)
IT Electric insulators
(based on high-pressure low-d. polyethylene for undersea **optical fiber cable** covering with good resistance to tensile and bending stress)
IT Silanes
(for modifying polyolefin as adhesive layer for undersea **optical fiber cable** covering with good resistance to tensile and bending stress)
IT Polyolefins
(for undersea **optical fiber cable** covering with good resistance to tensile and bending stress)
IT **Optical cables**
(undersea; polyethylene-based covering with good resistance to tensile and bending stress for)
IT 25087-34-7DP, maleated or vinyltrimethoxysilane-grafted
(F 30HG; for undersea **optical fiber cable** covering with good resistance to tensile and bending stress)
IT 108-31-6DP, Maleic anhydride, reaction products with ethylene

polymers 2768-02-7DP, Vinyltrimethoxysilane, reaction products with ethylene polymers
(as adhesive layer for undersea **optical fiber cable** covering with good resistance to tensile and bending stress)

IT **9010-77-9**, Yukalon EAA A 201K 35312-82-4, Linklon XF 800T
(as adhesive layer for undersea **optical fiber cable** covering with good resistance to tensile and bending stress)

IT 7440-50-8, Copper, uses
(as pressure-resistant pipe for undersea **optical fiber cable**)

IT 78-08-0, Vinyltriethoxysilane 2530-85-0, .gamma.-Methacryloxypropyltrimethoxysilane
(for modifying polyolefin as adhesive layer for undersea **optical fiber cable** covering with good resistance to tensile and bending stress)

L49 ANSWER 3 OF 18 HCA COPYRIGHT 2003 ACS on STN

136:387221 Monolayer or multilayer articles produced from composition comprising flexible hydrogenated block copolymers. Donald, Robert J.; Hahnfeld, Jerry L.; Parsons, Gary D.; Hahn, Stephen F.; Patel, Rajen M.; Esneault, Calvin P.; Phipps, Laura M.; Pate, James E.; Bhattacharjee, Debkumar (USA). U.S. Pat. Appl. Publ. US 2002061982 A1 20020523, 29 pp., Cont.-in-part of U.S. Ser. No. 575,063. (English). CODEN: USXXCO. APPLICATION: US 2001-944423 20010831. PRIORITY: US 1999-PV139075 19990611; US 1999-PV146008 19990728; US 2000-PV193313 20000330; US 2000-575063 20000519.

AB Title compn. comprises a hydrogenated block copolymer having .gtoreq.2 distinct blocks of hydrogenated vinyl arom. polymer and .gtoreq.1 block of hydrogenated conjugated diene polymer. The block copolymer is further characterized by: (I) a wt. ratio of hydrogenated conjugated diene polymer block to hydrogenated vinyl arom. polymer block >40:60; (II) a total no. av. mol. wt. (Mnt) 30,000-150,000, wherein each hydrogenated vinyl arom. polymer block (A) has a Mna 5,000-45,000 and each hydrogenated conjugated diene polymer block (B) has a Mnb 12,000-110,000; and (III) a hydrogenation level such that each hydrogenated vinyl arom. polymer block has a hydrogenation level >90% and each hydrogenated conjugated diene polymer block has a hydrogenation level >95%. The block copolymers can be successfully used in a variety of applications including films, profiles, sheets, coatings, injection molded articles, blow or rotational molded articles and pultruded articles.

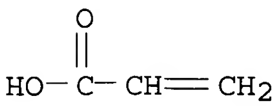
IT **9010-77-9**, Acrylic acid-ethylene copolymer
(manuf. of monolayer or multilayer articles from a compn. comprising flexible hydrogenated block copolymers)

RN 9010-77-9 HCA

CN 2-Propenoic acid, polymer with ethene (9CI) (CA INDEX NAME)

CM 1

CRN 79-10-7
CMF C3 H4 O2



CM 2

CRN 74-85-1
CMF C2 H4

IC ICM C08F036-00
ICS C08F236-10; C08F008-02; C08F008-42; C08C019-02
NCL 525332900
CC 38-3 (Plastics Fabrication and Uses)
IT Construction materials
Containers
Extrusion of plastics and rubbers
Furniture
Gloves
Household furnishings
Hydrogenation
Labels
Liquid crystal displays
Medical equipment
Nonwoven fabrics
Optical fibers
Optical imaging devices
Packaging materials
Pipes and Tubes
Plastic films
Plates
Polymer blend compatibilizers
Textiles
Toys
Yarns
(manuf. of monolayer or multilayer articles from a compn. comprising flexible hydrogenated block copolymers)
IT 9003-54-7, Styrene-acrylonitrile copolymer 9003-56-9, Acrylonitrile-butadiene-styrene copolymer **9010-77-9**, Acrylic acid-ethylene copolymer 25038-59-9, Polyethylene terephthalate, uses 25067-34-9, Ethylene-vinyl alcohol copolymer
(manuf. of monolayer or multilayer articles from a compn. comprising flexible hydrogenated block copolymers)

L49 ANSWER 4 OF 18 HCA COPYRIGHT 2003 ACS on STN

136:387220 Monolayer or multilayer articles produced from a composition comprising hydrogenated block copolymers. Donald, Robert J.; Parsons, Gary D.; Hahnfeld, Jerry L.; Hahn, Stephen F.; Patel, Rajen M.; Phipps, Laura M.; Esneault, Calvin P.; Pate, James E. (USA). U.S. Pat. Appl. Publ. US 2002061981 A1 20020523, 22 pp., Cont.-in-part of U.S. Ser. No. 575,062. (English). CODEN: USXXCO. APPLICATION: US 2001-943925 20010831. PRIORITY: US 1999-PV139074 19990611; US 1999-PV146008 19990728; US 2000-PV193313 20000330; US 2000-575062 20000519.

AB Title compn. comprises a block copolymers having .gtoreq.2 distinct blocks of hydrogenated vinyl arom. polymer and .gtoreq.1 block of hydrogenated conjugated diene polymer. The block copolymer is further characterized by: (a) a wt. ratio of hydrogenated conjugated diene polymer block to hydrogenated vinyl arom. polymer block .ltoreq.40:60; (b) a total no. av. mol. wt. (Mnt) 30,000-150,000, wherein each hydrogenated vinyl arom. polymer block (A) has a Mna 6,000-60,000 and each hydrogenated conjugated diene polymer block (B) has a Mnb of from 3,000 to 30,000; and (c) a hydrogenation level such that each hydrogenated vinyl arom. polymer block has a hydrogenation level >90% and each hydrogenated conjugated diene polymer block has a hydrogenation level >95%. The copolymer can be successfully used in a variety of applications including films, profiles, sheets, pultruded articles, fibers, coated articles, injection molded articles and blow or rotational molded articles.

IT **9010-77-9**, Acrylic acid-ethylene copolymer
(manuf. of monolayer or multilayer articles from a compn. comprising hydrogenated block copolymers)

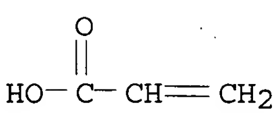
RN 9010-77-9 HCA

CN 2-Propenoic acid, polymer with ethene (9CI) (CA INDEX NAME)

CM 1

CRN 79-10-7

CMF C3 H4 O2



CM 2

CRN 74-85-1

CMF C2 H4

IC ICM C08F036-00

ICS C08F236-10; C08F008-02; C08F008-42; C08C019-02

NCL 525332900

CC 38-3 (Plastics Fabrication and Uses)
IT Construction materials
Extrusion of plastics and rubbers
Furniture
Household furnishings
Hydrogenation
Labels
Liquid crystal displays
Medical equipment
Nonwoven fabrics
Optical fibers
Optical imaging devices
Packaging materials
Pipes and Tubes
Plastic films
Plates
Polymer blend compatibilizers
Textiles
Toys
Yarns
(manuf. of monolayer or multilayer articles from a compn. comprising hydrogenated block copolymers)
IT 9002-88-4D, Polyethylene, chlorinated 9003-54-7, Styrene-acrylonitrile copolymer 9003-56-9, Acrylonitrile-butadiene-styrene copolymer **9010-77-9**, Acrylic acid-ethylene copolymer 25038-59-9, Polyethylene terephthalate, uses 25067-34-9, Ethylene-vinyl alcohol copolymer
(manuf. of monolayer or multilayer articles from a compn. comprising hydrogenated block copolymers)

L49 ANSWER 5 OF 18 HCA COPYRIGHT 2003 ACS on STN
136:280190 Safety glass interlayer film made from thermosetting ethylene/.alpha.-olefin composition. Heck, Henry G.; Waszeciak, Douglas P. (DuPont Dow Elastomers L.L.C., USA). PCT Int. Appl. WO 2002026881 A2 20020404, 25 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2001-US30594 20010928. PRIORITY: US 2000-PV237763 20000929; US 2001-960427 20010921.
AB Safety glass interlayers exhibiting excellent combination of tear strength and clarity are prepd. from a compn. comprising: A) A homogeneously linear or substantially linear ethylene/.alpha.-olefin interpolymer, e.g., ethylene/1-octene; B) A coagent contg. at least two vinyl groups, e.g., trimethylolpropane tri(meth)acrylate; and C) A peroxide, e.g., Luperox 101.
IT **9010-77-9**, Acrylic Acid-ethylene copolymer

(safety glass interlayer film made from thermosetting ethylene/.alpha.-olefin compn.)

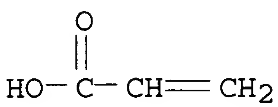
RN 9010-77-9 HCA

CN 2-Propenoic acid, polymer with ethene (9CI) (CA INDEX NAME)

CM 1

CRN 79-10-7

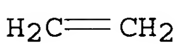
CMF C3 H4 O2



CM 2

CRN 74-85-1

CMF C2 H4



IC ICM C08L023-04
ICS C08K005-00; B32B017-10

CC 37-3 (Plastics Manufacture and Processing)
Section cross-reference(s): 38

IT Adhesives
Coating materials
Foams
Latex
Lenses
Medical goods
Optical cables
Pipes and Tubes
Plastic films
(safety glass interlayer film made from thermosetting ethylene/.alpha.-olefin compn.)

IT **9010-77-9**, Acrylic Acid-ethylene copolymer 24937-78-8, Ethylene-Vinyl Acetate copolymer 25087-34-7, EXACT 4011
(safety glass interlayer film made from thermosetting ethylene/.alpha.-olefin compn.)

L49 ANSWER 6 OF 18 HCA COPYRIGHT 2003 ACS on STN

136:185167 Fire-resistant polyester elastomer compositions for moldings with excellent appearance, uniform thickness, and flexibility. Furuta, Yoko; Wada, Seikichi (Du Pont-Toray Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2002060596 A2 20020226, 9 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-154746 20010524. PRIORITY: JP 2000-166933 20000605.

AB The compns., useful for coverings of elec. **cables** and

optical fibers, contain polyether-polyester block copolymers bearing high-m.p. cryst. arom. polyester segments and low-m.p. aliph. polyether segments 100, P compds. 1-50, and fatty acid amides 0.01-10 parts. Thus, a test piece manuf. from a 100:15:1.0 mixt. of 1,4-butanediol-polytetramethylene glycol-terephthalic acid block copolymer, resorcinol bis(di-2,6-dimethylphenyl phosphate), and ethylene bis(oleamide) showed fire resistance (UL 94) V-2, tensile modulus 423 MPa, and no impurities.

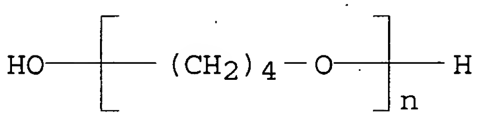
IT **106159-00-6P**, 1,4-Butanediol-poly(tetramethylene glycol)-terephthalic acid block copolymer
(rubber; fire-resistant polyoxyalkylene-polyester block elastomer compns. for elec. **cables** and **optical fibers** with good appearance and flexibility)

RN 106159-00-6 HCA

CN 1,4-Benzenedicarboxylic acid, polymer with 1,4-butanediol and .alpha.-hydro-.omega.-hydroxypoly(oxy-1,4-butanediyl), block (9CI) (CA INDEX NAME)

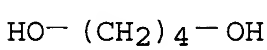
CM 1

CRN 25190-06-1
CMF (C4 H8 O)n H2 O
CCI PMS



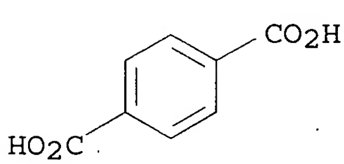
CM 2

CRN 110-63-4
CMF C4 H10 O2



CM 3

CRN 100-21-0
CMF C8 H6 O4



IC ICM C08L067-00
ICS C08K003-32; C08K005-20; C08K005-29; C08K005-3492; C08K005-521; C08L075-00; C09K021-04; C09K021-10; C09K021-12; C08L067-00; C08L027-18

CC 39-9 (Synthetic Elastomers and Natural Rubber)
Section cross-reference(s): 73, 76

ST fire resistance polyester elastomer tube phosphate; polyoxyalkylene polyester block elastomer **optical fiber**; PBT
PTMG elastomer elec cable flexibility

IT Polyphosphoric acids
(ammonium salts; fire-resistant polyoxyalkylene-polyester block elastomer compns. for elec. **cables** and **optical fibers** with good appearance and flexibility)

IT Polyester rubber
Synthetic rubber, preparation
(butanediol-di-Me terephthalate-polypropylene glycol bis(hydroxyethyl) ether, block; fire-resistant polyoxyalkylene-polyester block elastomer compns. for elec. **cables** and **optical fibers** with good appearance and flexibility)

IT Polyester rubber
Synthetic rubber, preparation
(butanediol-di-Me terephthalate-polytetramethylene glycol, block; fire-resistant polyoxyalkylene-polyester block elastomer compns. for elec. **cables** and **optical fibers** with good appearance and flexibility)

IT Polyester rubber
Synthetic rubber, preparation
(butanediol-polytetramethylene glycol-terephthalic acid, block; fire-resistant polyoxyalkylene-polyester block elastomer compns. for elec. **cables** and **optical fibers** with good appearance and flexibility)

IT Fire-resistant materials
Fireproofing agents
(fire-resistant polyoxyalkylene-polyester block elastomer compns. for elec. **cables** and **optical fibers** with good appearance and flexibility)

IT Fluoropolymers, uses
(fire-resistant polyoxyalkylene-polyester block elastomer compns. for elec. **cables** and **optical fibers** with good appearance and flexibility)

IT **Optical fibers**
(fire-resistant polyoxyalkylene-polyester block elastomer compns. for **optical fiber** coverings)

IT 110-31-6, Ethylene bis(oleamide) 2162-74-5, Bis(2,6-diisopropylphenyl)carbodiimide 9002-84-0, Polytetrafluoroethylene 29963-44-8, 2,4,6-Triisopropylphenyl diisocyanate homopolymer 37640-57-6, Melamine cyanurate 60768-10-7, Light Amide WH 255 139189-30-3, Resorcinol bis(di-2,6-dimethylphenyl phosphate)
(fire-resistant polyoxyalkylene-polyester block elastomer compns. for elec. **cables** and **optical fibers** with good appearance and flexibility)

IT **106159-00-6P**, 1,4-Butanediol-poly(tetramethylene glycol)-terephthalic acid block copolymer 106465-17-2P, 1,4-Butanediol-dimethyl terephthalate-polytetramethylene glycol block copolymer 228545-71-9P
(rubber; fire-resistant polyoxyalkylene-polyester block elastomer compns. for elec. **cables** and **optical fibers** with good appearance and flexibility)

L49 ANSWER 7 OF 18 HCA COPYRIGHT 2003 ACS on STN
136:136107 Fire-resistant polyester elastomer compositions with good flexibility and viscosity stability. Chiba, Kazumasa; Wada, Masayoshi; Kubo, Yasushi (Du Pont-Toray Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2002030204 A2 20020131, 9 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-124705 20010423. PRIORITY: JP 2000-135319 20000509.

AB The compn., useful for coverings of wire and **optical fiber**, comprises (A) 100 parts polyoxyalkylene-polyester block copolymer having a high-m.p. cryst. polymer segment contg. a cryst. arom. polyester unit and a low-m.p. cryst. polymer segment contg. an aliph. polyether unit; (B) 1-50 parts phosphorus compd., 0.01-10 parts (C) a monocarbodiimide and/or (D) polycarbodiimide, and optionally, (E) 0.1-30 parts nitrogen-contg. compd. and (F) 0.01-10 parts fluoropolymer. Thus, 100 parts terephthalic acid-1,4-butanediol-poly(tetramethylene oxide) glycol block copolymer was mixed with 15 parts resorcinol-bis-(di-2,6-dimethylphenyl phosphate) and 1.5 parts diphenylcarbodiimide and molded, showing UL 94 fire resistance rating V-2, melt flowing rate (240.degree. for 15 min retention) 4.8 and ensile elasticity 404 MPa.

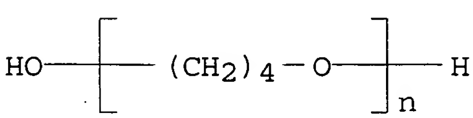
IT **106159-00-6**
(rubber; fire-resistant polyester elastomer compns. with good flexibility and viscosity stability)

RN 106159-00-6 HCA

CN 1,4-Benzenedicarboxylic acid, polymer with 1,4-butanediol and .alpha.-hydro-.omega.-hydroxypoly(oxy-1,4-butanediyl), block (9CI) (CA INDEX NAME)

CM 1

CRN 25190-06-1
CMF (C4 H8 O)n H2 O
CCI PMS



CM 2

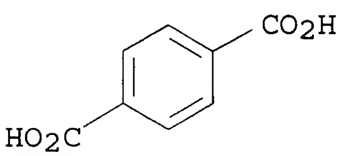
CRN 110-63-4

CMF C4 H10 O2

HO— $(CH_2)_4$ —OH

CM 3

CRN 100-21-0
CMF C8 H6 O4



IC ICM C08L067-00
ICS C08K003-32; C08K005-29; C08K005-3492; C08K005-521; H01B003-42; H01B007-295; C08L067-00; C08L079-00; C08L027-12
CC 39-15 (Synthetic Elastomers and Natural Rubber)
Section cross-reference(s): 73, 76
IT Electric cables
Optical fibers
(coverings; fire-resistant polyester elastomer compns. with good flexibility and viscosity stability for)
IT **106159-00-6** 106465-17-2
(rubber; fire-resistant polyester elastomer compns. with good flexibility and viscosity stability)

L49 ANSWER 8 OF 18 HCA COPYRIGHT 2003 ACS on STN
135:358977 Environmentally friendly fire-resistant thermoplastic compositions, their manufacture, moldings, and electric conductors or **optical fibers** covered with them. Kobayashi, Kazuhiko; Okubo, Ken; Kishimoto, Shinichi; Nishiguchi, Masaki; Yamada, Hitoshi; Hashimoto, Hiroshi (Riken Vinyl Industry Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2001316537 A2 20011116, 41 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-261974 20000830. PRIORITY: JP 1999-242821 19990830; JP 2000-54497 20000229.
AB The compns. contain (A) 100 parts thermoplastic resins comprising (a) (hydrogenated) block copolymers consisting of .gtoreq.2 arom. vinyl polymer blocks and .gtoreq.1 conjugated diene polymer block 3-55, (b) nonarom. softeners for rubbers 0-40, (c) ethylene-.alpha.-olefin copolymers 0-80, (d) (d1) EVA and/or ethylene-(meth)acrylic acid (ester) copolymer 5-80 and/or (d2) ethylene-propylene rubber 5-50, (e) propylene polymer 0-50, (r) unsatd. carboxylic acid-modified ethylene polymers 0-30, and (p) acrylic rubber 0-45%, (g) 0.01-0.6 parts org. peroxides, (h) 0.03-1.8 parts (meth)acrylate and/or allyl crosslinking aids, and (B) 50-300 parts metal hydroxides contg. specific ratio of silane coupling agent-treated ones. Thus, a conductive wire was jacketed

with a compn. comprising Septon 4077 (SEPS) 15, Diana Process Oil PW 90 5, EV 170 (EVA) 50, PN 610S (block propylene polymer) 25, Admer EX 070 (maleated LLDPE) 5, Perhexa 25B 0.2, NK Ester 3G 0.6, Kisuma 5LH 250, Irganox 1010 1, and wax 2 parts. The resulted elec. wire showed good fire, abrasion, and heat resistance and no whitening on winding.

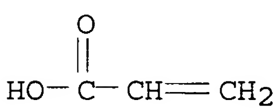
IT **9010-77-9**, Ethylene-acrylic acid copolymer
(environmentally friendly fire-resistant thermoplastic compns. for moldings or jackets for elec. wires or **optical fibers**)

RN 9010-77-9 HCA

CN 2-Propenoic acid, polymer with ethene (9CI) (CA INDEX NAME)

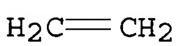
CM 1

CRN 79-10-7
CMF C3 H4 O2



CM 2

CRN 74-85-1
CMF C2 H4



IC ICM C08L023-08
ICS C08J005-00; C08K003-22; C08K003-24; C08K003-38; C08K005-10; C08K005-14; C08K005-3477; C08K009-06; C08L023-12; C08L023-16; C08L023-26; C08L031-04; C08L033-02; C08L033-06; C08L033-08; C08L053-02; C08L091-00; G02B006-44; H01B007-295

CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 37, 39, 73, 76

ST fire resistant thermoplastic environmentally friendly; SEPS EVA blend elec wire jacket; **optical fiber** jacket
fire resistant thermoplastic; silane treated hydroxide flame retardant thermoplastic

IT Ethylene-propylene rubber
(EP 07P; environmentally friendly fire-resistant thermoplastic compns. for moldings or jackets for elec. wires or **optical fibers**)

IT Ethylene-vinyl acetate rubber
(Levapren 700HV; environmentally friendly fire-resistant thermoplastic compns. for moldings or jackets for elec. wires or **optical fibers**)

IT Fire-resistant materials

(dielec. fire-resistant materials; environmentally friendly fire-resistant thermoplastic compns. for moldings or jackets for elec. wires or **optical fibers**)

IT Electric cables
Fire-resistant materials
Optical fibers
(environmentally friendly fire-resistant thermoplastic compns. for moldings or jackets for elec. wires or **optical fibers**)

IT Acrylic rubber
(environmentally friendly fire-resistant thermoplastic compns. for moldings or jackets for elec. wires or **optical fibers**)

IT Molded plastics, uses
Polymer blends
(environmentally friendly fire-resistant thermoplastic compns. for moldings or jackets for elec. wires or **optical fibers**)

IT Synthetic rubber, uses
(ethylene-Me acrylate, Vamac DLS; environmentally friendly fire-resistant thermoplastic compns. for moldings or jackets for elec. wires or **optical fibers**)

IT Synthetic rubber, uses
(ethylene-Me acrylate-unsatd. acid, Vamac GLS; environmentally friendly fire-resistant thermoplastic compns. for moldings or jackets for elec. wires or **optical fibers**)

IT Polyolefin rubber
(ethylene-octene, Engage EG 8100; environmentally friendly fire-resistant thermoplastic compns. for moldings or jackets for elec. wires or **optical fibers**)

IT Electric insulators
(fire-resistant elec. insulators; environmentally friendly fire-resistant thermoplastic compns. for moldings or jackets for elec. wires or **optical fibers**)

IT Isoprene-styrene rubber
(hydrogenated, block, triblock, Septon 4077; environmentally friendly fire-resistant thermoplastic compns. for moldings or jackets for elec. wires or **optical fibers**)

IT Linear low density polyethylenes
(maleated; environmentally friendly fire-resistant thermoplastic compns. for moldings or jackets for elec. wires or **optical fibers**)

IT Peroxides, uses
(org.; environmentally friendly fire-resistant thermoplastic compns. for moldings or jackets for elec. wires or **optical fibers**)

IT Fireproofing agents
(silane coupling agent-treated hydroxides; environmentally friendly fire-resistant thermoplastic compns. for moldings or jackets for elec. wires or **optical fibers**)

IT Hydroxides (inorganic)
(silane coupling agent-treated, flame retardants; environmentally

friendly fire-resistant thermoplastic compns. for moldings or jackets for elec. wires or **optical fibers**)

IT Coupling agents
(silanes, for flame retardants; environmentally friendly fire-resistant thermoplastic compns. for moldings or jackets for elec. wires or **optical fibers**)

IT Silanes
(vinyl, coupling agents for flame retardants; environmentally friendly fire-resistant thermoplastic compns. for moldings or jackets for elec. wires or **optical fibers**)

IT 1309-42-8, Magnesium hydroxide
(Kisuma 5B, silane coupling agent-treated, flame retardant; environmentally friendly fire-resistant thermoplastic compns. for moldings or jackets for elec. wires or **optical fibers**)

IT 74-85-1D, Ethylene, polymers with .alpha.-olefins, maleated
(LLDPE; environmentally friendly fire-resistant thermoplastic compns. for moldings or jackets for elec. wires or **optical fibers**)

IT 25213-02-9, Umerit 2525F
(Umerit 2525F; environmentally friendly fire-resistant thermoplastic compns. for moldings or jackets for elec. wires or **optical fibers**)

IT 109-16-0, NK Ester 3G
(crosslinking aid; environmentally friendly fire-resistant thermoplastic compns. for moldings or jackets for elec. wires or **optical fibers**)

IT 110-16-7D, Maleic acid, reaction products with LLDPE 115-07-1D, Propylene, block or random polymers 9003-07-0, ATF 133 **9010-77-9**, Ethylene-acrylic acid copolymer 9010-86-0, A 714 24937-78-8, EVA 25053-53-6, Ethylene-methacrylic acid copolymer 25085-53-4, CJ 700 26221-73-8, Affinity FM 1570 112938-52-0, Admer XE 070 328242-36-0, PN 610S 373385-58-1, F 227D
(environmentally friendly fire-resistant thermoplastic compns. for moldings or jackets for elec. wires or **optical fibers**)

IT 9010-79-1
(ethylene-propylene rubber, EP 07P; environmentally friendly fire-resistant thermoplastic compns. for moldings or jackets for elec. wires or **optical fibers**)

IT 24937-78-8
(ethylene-vinyl acetate rubber, Levapren 700HV; environmentally friendly fire-resistant thermoplastic compns. for moldings or jackets for elec. wires or **optical fibers**)

IT 265997-88-4, Kisuma 5LH
(flame retardant; environmentally friendly fire-resistant thermoplastic compns. for moldings or jackets for elec. wires or **optical fibers**)

IT 25038-32-8
(isoprene-styrene rubber, hydrogenated, block, triblock, Septon 4077; environmentally friendly fire-resistant thermoplastic

compns. for moldings or jackets for elec. wires or
optical fibers)

IT 25103-74-6, Ethylene-methyl acrylate copolymer
(rubber; environmentally friendly fire-resistant thermoplastic
compns. for moldings or jackets for elec. wires or
optical fibers)

L49 ANSWER 9 OF 18 HCA COPYRIGHT 2003 ACS on STN
134:57506 Blend or dispersion compositions comprising hydrogenated block copolymers and end-use molding applications. Donald, Robert J.; Hahnfeld, Jerry L.; Parsons, Gary D.; Hahn, Stephen F.; Patel, Rajen M.; Esneault, Calvin P.; Phipps, Laura M.; Pate, James E. (The Dow Chemical Company, USA). PCT Int. Appl. WO 2000077095 A1 20001221, 53 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO 2000-US13900 20000519. PRIORITY: US 1999-PV139074 19990611; US 1999-PV146008 19990728; US 2000-PV193313 20000330.

AB Flexible hydrogenated block copolymers can be used in films, profiles, sheets, coatings, injection molded articles, blow or rotational molded articles and pultruded articles. The title blends comprise fully hydrogenated block copolymers of vinyl arom. unit and conjugated diene unit at wt. ratio 60:40 or less, a no.-av. mol. wt. (Mn) 30,000-150,000, a hydrogenated vinyl arom. unit Mn 6000-60,000, a hydrogenated conjugated diene unit Mn 3000-30,000, and a hydrogenation level >90%.

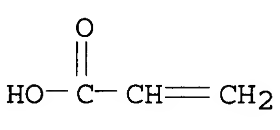
IT **9010-77-9**, Ethylene acrylic acid copolymer
(blend compns. comprising hydrogenated block copolymers for
moldings with good balance of phys. properties)

RN 9010-77-9 HCA

CN 2-Propenoic acid, polymer with ethene (9CI) (CA INDEX NAME)

CM 1

CRN 79-10-7
CMF C3 H4 O2



CM 2

CRN 74-85-1
CMF C2 H4

$H_2C{=}CH_2$

IC ICM C08L053-02
ICS C08F008-04; B32B027-00
CC 37-6 (Plastics Manufacture and Processing)
Section cross-reference(s): 38
IT Bottles
Containers
Electric cables
Filters
Food packaging
Gaskets
Geomembranes
Gloves
Hoses
Household furnishings
Labels
Laboratory ware
Lenses
Liquid crystal displays
Membranes, nonbiological
Nonwoven fabrics
Optical fibers
Pipes and Tubes
Plates
Roofing
Sign materials
Solar collectors
Syringes
Textiles
Toys
Yarns
(blend compns. comprising hydrogenated block copolymers for moldings with good balance of phys. properties)
IT 9002-85-1, Polyvinylidene chloride 9002-86-2, Polyvinyl chloride 9002-88-4D, Polyethylene, chlorinated 9003-53-6D, Polystyrene, hydrogenated 9003-54-7 9003-56-9, Acrylonitrile-butadiene-styrene copolymer **9010-77-9**, Ethylene acrylic acid copolymer 25038-59-9, Polyethylene terephthalate, uses 25067-34-9, Ethylene vinyl alcohol copolymer 25068-12-6, Ethylene styrene copolymer
(blend compns. comprising hydrogenated block copolymers for moldings with good balance of phys. properties)

L49 ANSWER 10 OF 18 HCA COPYRIGHT 2003 ACS on STN
132:50869 **Optical fiber cable** assembly.
Girgis, Mikhail M. (PPG Industries, Inc., USA). U.S. US 6004676 A 19991221, 14 pp., Cont.-in-part of U.S. Ser. No. 81,045, abandoned. (English). CODEN: USXXAM. APPLICATION: US 1995-522782 19950901. PRIORITY: US 1992-900034 19920617; US 1993-81045 19930622.

AB **Optical fiber cable** assembly includes an **optical fiber** and a reinforcement strand contg. a plurality of sized glass fibers positioned about the **optical fiber**, and a strand with a dried residue of a urethane-free secondary aq. coating compn. The coating compn. contains a vinyl/acrylic polymer and a vinyl arom. polymer. The surface of the strand wicks water at a rate of less than about 25.4 mm (one inch) in about six hours at a temp. of about 25.degree. C. A method for reducing the wicking of water along the surface of a glass fiber strand is also provided.

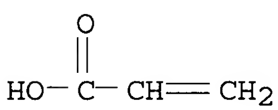
IT **9010-77-9**, Acrylic acid-ethylene copolymer
(Michem Prime 4983HS; **optical fiber cable** assembly)

RN 9010-77-9 HCA

CN 2-Propenoic acid, polymer with ethene (9CI) (CA INDEX NAME)

CM 1

CRN 79-10-7
CMF C3 H4 O2



CM 2

CRN 74-85-1
CMF C2 H4

IC ICM B32B009-00

NCL 428388000

CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 42, 73

ST **optical fiber cable** assembly; acrylic vinyl coating **optical fiber cable**

IT Glass fibers, uses
(H 15; **optical fiber cable** assembly)

IT Styrene-butadiene rubber, uses
(carboxy-contg., Rovene 5550; **optical fiber cable** assembly)

IT Polysiloxanes, uses
(ethoxylated, LE 9300; **optical fib r cable** assembly)

IT Hydrocarbon waxes, uses
(microcryst.; **optical fiber cable**

assembly)
IT Adhesion, physical
Coating materials
Optical cables
Sizes (agents)
Stiffness
Tensile strength
(**optical fiber cable** assembly)
IT Phenolic resins, uses
(**optical fiber cable** assembly)
IT 13822-56-5
(A 1108; **optical fiber cable**
assembly)
IT 25767-47-9, Butyl acrylate-styrene copolymer
(Fulatex PN 3716G; **optical fiber**
cable assembly)
IT 29497-14-1, Butyl acrylate-butyl methacrylate-styrene copolymer
(Fulatex PN 3716L1; **optical fiber**
cable assembly)
IT **9010-77-9**, Acrylic acid-ethylene copolymer
(Michem Prime 4983HS; **optical fiber**
cable assembly)
IT 67185-58-4, Emery 6717 101707-39-5, Airvol 205 107852-39-1,
Emery 6760
(**optical fiber cable** assembly)
IT 24969-11-7, Formaldehyde-resorcinol copolymer
(**optical fiber cable** assembly)
IT 2530-85-0, A 174
(**optical fiber cable** assembly)
IT 9045-70-9, Rhoplex E 32 52624-57-4, Pluracol V 10
(**optical fiber cable** assembly)
IT 83513-69-3, Rhoplex NW 1715 252752-64-0, Fulatex PN 3716J
(**optical fiber cable** assembly)
IT 9003-55-8
(styrene-butadiene rubber, carboxy-contg., Rovene 5550;
optical fiber cable assembly)

L49 ANSWER 11 OF 18 HCA COPYRIGHT 2003 ACS on STN
126:349414 Temperature sensitivity of coated stress-induced birefringent **optical fibers**. Chiang, Kin Seng (Department of Electronic Engineering, City University of Hong Kong, Kowloon, Hong Kong). Optical Engineering (Bellingham, Washington), 36(4), 999-1007 (English) 1997. CODEN: OPEGAR. ISSN: 0091-3286. Publisher: SPIE-The International Society for Optical Engineering.
AB An approx. anal. theory is developed to describe the effects of temp. on the birefringence in a coated stress-induced birefringent **optical fiber**. Because of the mismatch in the thermal expansion coeffs. of the cladding and the stress-applying sections in the fiber, the birefringence in the fiber responds directly to a change of temp. Addnl. changes in the birefringence can be produced indirectly by the temp.-induced radial stress and axial strain in the glass fiber through the fiber coating.

Depending on the coating material and thickness as well as the thermoelastic properties of the fiber glasses, the indirect effect can reinforce or cancel the direct effect. It is possible to design a fiber with a birefringence that is insensitive to temp. variation over a range of temp. Expressions suitable for fiber design are presented. Both plastic and metal coating materials are considered. Design examples for boron-doped fibers are given.

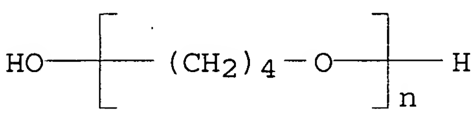
IT **106159-00-6**, Butanediol-polytetramethylene glycol-terephthalic acid block copolymer
(rubber, coatings; temp. sensitivity of coated stress-induced birefringent **optical fibers**)

RN 106159-00-6 HCA

CN 1,4-Benzenedicarboxylic acid, polymer with 1,4-butanediol and .alpha.-hydro-.omega.-hydroxypoly(oxy-1,4-butanediyl), block (9CI) (CA INDEX NAME)

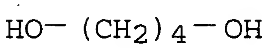
CM 1

CRN 25190-06-1
CMF (C4 H8 O)n H2 O
CCI PMS



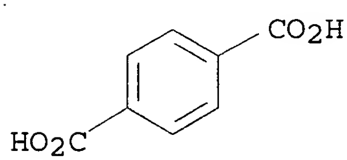
CM 2

CRN 110-63-4
CMF C4 H10 O2



CM 3

CRN 100-21-0
CMF C8 H6 O4



CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 38, 39, 42

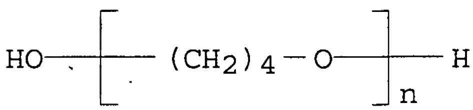
ST **optical fiber** birefringent coated temp sensitive
IT Polyester rubber
(butanediol-polytetramethylene glycol-terephthalic acid, block, Hytrel, coatings; temp. sensitivity of coated stress-induced birefringent **optical fibers**)
IT Polyester rubber
Synthetic rubber, uses
(butanediol-polytetramethylene glycol-terephthalic acid, block, block, Hytrel, coatings; temp. sensitivity of coated stress-induced birefringent **optical fibers**)
IT Polysiloxanes, uses
(coatings; temp. sensitivity of coated stress-induced birefringent **optical fibers**)
IT Birefringence
Coating materials
Optical fibers
(temp. sensitivity of coated stress-induced birefringent **optical fibers**)
IT Borosilicate glasses
(temp. sensitivity of coated stress-induced birefringent **optical fibers**)
IT 7429-90-5, Aluminum, uses
(coatings; temp. sensitivity of coated stress-induced birefringent **optical fibers**)
IT **106159-00-6**, Butanediol-polytetramethylene glycol-terephthalic acid block copolymer
(rubber, coatings; temp. sensitivity of coated stress-induced birefringent **optical fibers**)

L49 ANSWER 12 OF 18 HCA COPYRIGHT 2003 ACS on STN
125:197980 Self-extinguishing cables releasing low quantities of toxic and corrosive smoke and gases, their production and coatings therefor. Castellani, Luca (Pirelli Cavi S.P.A., Italy). Eur. Pat. Appl. EP 723274 A2 19960724, 13 pp. DESIGNATED STATES: R: DE, ES, FR, GB, IT. (English). CODEN: EPXXDW. APPLICATION: EP 1995-203577 19951220. PRIORITY: IT 1994-MI2630 19941223.
AB A cable, self-extinguishing and releasing low quantities of toxic and corrosive smoke and gases, for optical or elec. applications, comprises a wire and a coating consisting of (1) an outer layer contg. a polymeric mixt. (B) of 50-80 parts of an arom. polyester of isophthalic and terephthalic acids with bisphenol A and 20-50 parts of a polyester-polyether block elastomer having Shore D hardness >50 and Vicat softening point >170.degree. and (2) a coaxial inner layer comprising a polyester thermoplastic elastomer (A) having a quantity of arom. groups such that its Shore D hardness is .gtoreq.45 and the delamination shear force necessary to sep. the layers is .gtoreq.2000 g after aging in ASTM No. 3 oil for 2 h at 100.degree.. The process comprises forming on a wire a first layer of (A) to a predetd. thickness, then forming a layer of (B) on the first layer.
IT **106159-00-6**, Butanediol-polytetramethylene glycol-terephthalic acid block copolymer
(rubber, inner coating layer; manuf. of cables with

self-extinguishing polymer coating layers contg.)
RN 106159-00-6 HCA
CN 1,4-Benzenedicarboxylic acid, polymer with 1,4-butanediol and .alpha.-hydro-.omega.-hydroxypoly(oxy-1,4-butanediyl), block (9CI) (CA INDEX NAME)

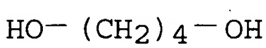
CM 1

CRN 25190-06-1
CMF (C4 H8 O)n H2 O
CCI PMS



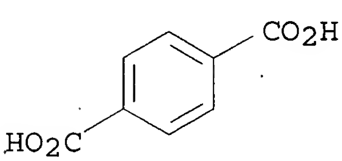
CM 2

CRN 110-63-4
CMF C4 H10 O2



CM 3

CRN 100-21-0
CMF C8 H6 O4



IC ICM H01B003-42
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 76
IT Communication
(**optical**, **cables**, with self-extinguishing polymer coating layers and their manuf.)
IT **106159-00-6**, Butanediol-polytetramethylene glycol-terephthalic acid block copolymer
(rubber, inner coating layer; manuf. of cables with self-extinguishing polymer coating layers contg.)

L49 ANSWER 13 OF 18 HCA COPYRIGHT 2003 ACS on STN
121:14810 Plating-free composite steel strips and their manufacture.

Wang, Shaocheng; Zhu, Dejun (Peop. Rep. China). Faming Zhuanli Shenqing Gongkai Shuomingshu CN 1078425 A 19931117, 6 pp. (Chinese). CODEN: CNXXEV. APPLICATION: CN 1993-111846 19930612.

AB The title strips consist of a cold-rolled steel strip covered with plastic films on both sides. The composite strips are manufd. by: descaling a steel strip with a dil. acid, pickling, degreasing with gasoline, removing the oil at 450-600.degree. in an inert gas, tempering at 600-800.degree., cooling to 450-550.degree. in N-O atm. to form an oxide layer on the surface, reheating, hot-pressing with plastic films, heat treating, and cooling to room temp. The obtained strips are suitable for covering elec. or **optical cables**.

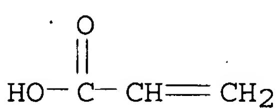
IT **9010-77-9P**, Ethylene-acrylic acid copolymer
(films, steel strips covered with, controlled heat treatment in manuf. of, for elec. or **optical cables**)

RN 9010-77-9 HCA

CN 2-Propenoic acid, polymer with ethene (9CI) (CA INDEX NAME)

CM 1

CRN 79-10-7
CMF C3 H4 O2



CM 2

CRN 74-85-1
CMF C2 H4

IC ICM B32B015-04
ICS B32B015-18; B32B031-22

CC 55-4 (Ferrous Metals and Alloys)
Section cross-reference(s): 38

ST composite steel strip plastic film; elec cable composite steel strip; **optical cable** composite steel strip

IT Communication
(**optical**, **cables**, steel strips covered with plastic films for, controlled heat treatment in manuf. of)

IT 9002-88-4P, Polyethylene **9010-77-9P**, Ethylene-acrylic acid copolymer
(films, steel strips covered with, controlled heat treatment in manuf. of, for elec. or **optical cables**)

L49 ANSWER 14 OF 18 HCA

121:11861 Plastic-metal laminated belt-like protectors for **optical cables** and their manufacture. Zhang, Guoji; Wang, jinliang; Ma, Cheng; et al. (Gingdao Plastic Plant No. 8, Peop. Rep. China). Faming Zhuanli Shenqing Gongkai Shuomingshu CN 1073396 A 19930623, 19 pp. (Chinese). CODEN: CNXXEV. APPLICATION: CN 1991-107970 19911218.

AB Title protectors, with good inter-layered adhesion, are prepd. by treating plastic sheets (preferably, ethylene-vinyl acid polymer blends or laminates) with elec. corona, spreading adhesives (e.g. polyurethanes) on the treated sheets, press laminating with elec. corona-treated metal sheets, cooling, rolling, and curing at room temp.

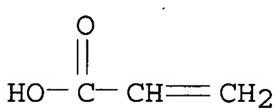
IT **9010-77-9P**, Acrylic acid-ethylene copolymer
(metal laminates, belt-like, prepn. of, as protectors for **optical cables**)

RN 9010-77-9 HCA

CN 2-Propenoic acid, polymer with ethene (9CI) (CA INDEX NAME)

CM 1

CRN 79-10-7
CMF C3 H4 O2



CM 2

CRN 74-85-1
CMF C2 H4

IC ICM B32B015-08
ICS B32B027-08

CC 42-10 (Coatings, Inks, and Related Products)
Section cross-reference(s): 38, 73

ST plastic metal laminate protector **optical cable**; ethylene polymer metal laminate adhesion

IT Urethane polymers, uses
(adhesives, prepn. of ethylene resin and metal laminates with, for **optical cable** protectors)

IT Adhesives
(prepn. of ethylene resin and metal laminates with, for **optical cable** protectors)

IT **Optical fibers**
(protectors for, ethylene resin and metal laminates, prepn. of)

IT Metals, uses

(steel plated with, laminates with ethylene resins, belt-like, prepn. of, as protectors for **optical cables**)

IT Coating materials
(anticorrosive, ethylene resin and metal laminates, prepn. of, with good adhesion, for **optical cables**)

IT Alkenes, preparation
(.alpha.-, polymers, metal laminates, belt-like, prepn. of, as protectors for **optical cables**)

IT 7429-90-5P, Aluminum, uses 7440-50-8P, Copper, uses 12597-69-2P, Steel, uses
(laminates with ethylene resins, belt-like, prepn. of, as protectors for **optical cables**)

IT 74-85-1DP, Ethene, polymers with olefins 9002-88-4P, LDPE **9010-77-9P**, Acrylic acid-ethylene copolymer 24937-78-8P, EVA 25053-53-6P, Ethylene-methacrylic acid copolymer
(metal laminates, belt-like, prepn. of, as protectors for **optical cables**)

IT 7440-31-5P, Tin, uses 7440-47-3P, Chromium, uses
(steel plated with, laminates with ethylene resins, belt-like, prepn. of, as protectors for **optical cables**)

L49 ANSWER 15 OF 18 HCA COPYRIGHT 2003 ACS on STN

118:108266 Flame-retardant coated **optical fibers**.
Konda, Eizi; Ishii, Nobuhisa; Wakita, Toru (Furukawa Electric Co., Ltd., Japan). Eur. Pat. Appl. EP 516438 A1 19921202, 7 pp. DESIGNATED STATES: R: DE, FR, GB, IT. (English). CODEN: EPXXDW. APPLICATION: EP 1992-304872 19920528. PRIORITY: JP 1991-123851 19910528.

AB The title **optical fibers** have an UV-curable resin primer, and a top coat made from a thermoplastic polyester elastomer contg. flame retardant material, e.g., ethylenebis-tetrabromophthalimide and Sb_2O_3. The **optical fibers** have high-flame retardancy and there is good bonding strength between the primer and top coat.

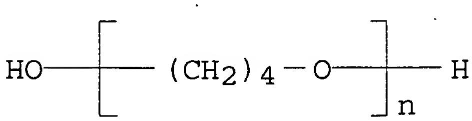
IT **106159-00-6**
(rubber, for coating **optical fibers**)

RN 106159-00-6 HCA

CN 1,4-Benzenedicarboxylic acid, polymer with 1,4-butanediol and .alpha.-hydro-.omega.-hydroxypoly(oxy-1,4-butanediyl), block (9CI) (CA INDEX NAME)

CM 1

CRN 25190-06-1
CMF (C4 H8 O)n H2 O
CCI PMS



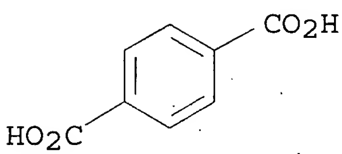
CM 2

CRN 110-63-4
CMF C4 H10 O2

$HO-(CH_2)_4-OH$

CM 3

CRN 100-21-0
CMF C8 H6 O4



IC ICM C03C025-02
ICS G02B006-44
CC 57-1 (Ceramics)
ST **optical fiber** flame retardant coating; antimony trioxide coating **optical fiber**; ethylene bromophthalimide coating **optical fiber**; UV resin primer **optical fiber**
IT Coating materials
(**optical fibers** with flame-retardant)
IT **Optical fibers**
(with UV-curing resin primer and flame retardant top coat)
IT Urethane polymers, compounds
(acrylates, polyester-based, UV-curing resin, for coating **optical fibers**)
IT Rubber, synthetic
(butanediol-polytetramethylene glycol-terephthalic acid, block, flame retardant Hytrel HTC 2551, for coating **optical fibers**)
IT 1309-64-4, Antimony trioxide, uses 32588-76-4
(flame retardant, for coating **optical fibers**)
IT **106159-00-6**
(rubber, for coating **optical fibers**)

L49 ANSWER 16 OF 18 HCA COPYRIGHT 2003 ACS on STN
112:236926 Electric or **optical cables** and coating them with an olefin copolymer inner layer and a polyamide outer layer. O'Leary, John; Adams, Erik (ICI Australia Operations Pty. Ltd., Australia). Brit. UK Pat. Appl. GB 2221080 A1 19900124, 17 pp. (English). CODEN: BAXXDU. APPLICATION: GB 1989-14658 19890626. PRIORITY: AU 1988-9285 19880713; AU 1988-1332 19881104;

AU 1988-1844 19881207.

AB Title cables are extrusion coated simultaneously with an inner layer of an olefin copolymer contg. 0.001-30% unsatd. acids/anhydrides and <0.25-mm-thick polyamide outer layer having high surface gloss, hardness, and HCO2H resistance, with .gtoreq.1 of the polymers being in the fluid state during the coating step. The coating exhibits good flexibility and resistance to abrasion and termite for underground use. Thus, a 4:1 LDPE-Modic L100F (ethylene-maleic anhydride graft copolymer) blend was coextruded with Ube 3020LU1 (I; polyamide 12) at 180.degree. onto an elec. cable sheathed in uncoated Al so that the I layer was 0.2 mm thick to give a tough uniform coating that exhibited no delamination after cooling or on subsequent bending of the cable.

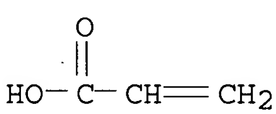
IT **9010-77-9**, Primacor 1410
(coatings contg. polyamide outer layers and inner layers of, abrasion-resistant single-step-applied, for underground elec. and **optical cables**)

RN 9010-77-9 HCA

CN 2-Propenoic acid, polymer with ethene (9CI) (CA INDEX NAME)

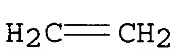
CM 1

CRN 79-10-7
CMF C3 H4 O2



CM 2

CRN 74-85-1
CMF C2 H4



IC ICM H01B007-28
ICS G02B006-00; H01B003-30; H01B003-44

ICA H01B011-22

CC 42-2 (Coatings, Inks, and Related Products)

ST extrusion bilayer coating elec cable; underground elec cable bilayer coating; ethylene copolymer bilayer coating cable; maleic copolymer bilayer coating cable; polyamide bilayer coating elec cable; **optical cable** bilayer coating; abrasion resistant bilayer coating cable; insect resistant bilayer coating cable; formic acid resistant coating cable

IT **Optical fibers**
(**cables** of, abrasion-resistant coatings for, contg. polyamide outer layers and polar olefin copolymer inner layers,

for underground use)

IT 9002-88-4, LDPE
(branched low-d., coatings contg. polyamide outer layers and inner layers of polar ethylene copolymers and, abrasion-resistant single-step-applied, for underground elec. or **optical cables**)

IT 24937-16-4, Poly[imino(1-oxo-1,12-dodecanediyl)]
(coatings contg. polar ethylene copolymer inner layers and outer layers of (Ube 3020LU1), abrasion-resistant single-step-applied, for underground elec. and **optical cables**)

IT 25038-74-8, Azacyclotridecan-2-one homopolymer
(coatings contg. polar ethylene copolymer inner layers and outer layers of, abrasion-resistant single-step-applied, for underground elec. and **optical cables**)

IT 127689-22-9, Modic L 100F
(coatings contg. polyamide outer anf inner layers of, abrasion-resistant single-step-applied, for underground elec. or **optical cables**)

IT 25750-84-9, Butyl acrylate-ethylene copolymer
(coatings contg. polyamide outer layers and inner layers of polar ethylene copolymers and, abrasion-resistant single-step-applied, for underground elec. and **optical cables**)

IT **9010-77-9**, Primacor 1410
(coatings contg. polyamide outer layers and inner layers of, abrasion-resistant single-step-applied, for underground elec. and **optical cables**)

IT 9002-88-4D, maleated
(coatings contg. polyamide outer layers and inner layers of, abrasion-resistant single-step-applied, for underground elec. or **optical cables**)

L49 ANSWER 17 OF 18 HCA COPYRIGHT 2003 ACS on STN

109:232296 Sheath retraction in **optical fiber cables**. Barnes, S. R.; Hill, O. C. A.; Vyas, M. K. R.; Sutehall, R. (STC Technol. Ltd., Harlow/Essex, CM17 9NA, UK). Plast. Telecommun., Int. Conf., 4th, Meeting Date 1986, 10/1-10/13. Sci. Technol. Publ.: Hornchurch, UK. (English) 1987. CODEN: 56IQAP.

AB In semicryst sheathing polymers for **fiber optic cables**, mol. ordering effects, e.g. pigmentation, must be considered along with shrinkback/viscoelastic effects when designing for sheath retraction.

IT **106159-00-6**
(rubber, sheaths, for **fiber optic cables**, retraction of, mol. ordering effect on)

RN 106159-00-6 HCA

CN 1,4-Benzenedicarboxylic acid, polymer with 1,4-butanediol and .alpha.-hydro-.omega.-hydroxypoly(oxy-1,4-butanediyl), block (9CI) (CA INDEX NAME)

CM 1

CRN 25190-06-1

CMF (C4 H8 O)n H2 O
CCI PMS

$HO-[(CH_2)_4-O]_n-H$

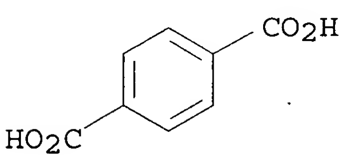
CM 2

CRN 110-63-4
CMF C4 H10 O2

$HO-(CH_2)_4-OH$

CM 3

CRN 100-21-0
CMF C8 H6 O4



CC 38-3 (Plastics Fabrication and Uses)
ST sheath retraction **fiber optic cable**;
mol ordering sheath retraction cable
IT Chains, chemical
(ordering of, in polymeric sheaths for **fiber optic cables**, retraction in relation to)
IT Rubber, synthetic
(butanediol-polytetramethylene glycol-terephthalic acid, sheaths, for **fiber optic cables**, retraction of, mol. ordering effect on)
IT Communication
(**optical**, **cables**, sheaths for, retraction of, mol. ordering effect on)
IT **106159-00-6**
(rubber, sheaths, for **fiber optic cables**, retraction of, mol. ordering effect on)
IT 25038-71-5, Tefzel 25101-45-5
(sheaths, for **fiber optic cables**, retraction of, mol. ordering effect on)

L49 ANSWER 18 OF 18 HCA
103:161507 Adhesive sheets or tubes for reinforcing joints in

fiber optics. (Nippon Telegraph and Telephone Public Corp., Japan). Jpn. Kokai Tokkyo Koho JP 60100106 A2 19850604 Showa, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1983-207596 19831107.

AB Adhesive sheets or tubes with high adhesion to glass or water-resistant materials, useful in reinforcing joints in quartz **optical fibers**, are prepd. from thermoplastic resins bearing OH or CO2H groups coated or impregnated with mixts. of isocyanatosilanes and tertiary amines. Thus, an 0.5-mm sheet of 75:25 C2H4-vinyl acetate polymer grafted with 1% acrylic acid was dipped in a soln. of 10% (EtO)3Si(CH2)3NCO [24801-88-5] and 1% triethylenediamine [280-57-9] in Me2CO, dried at 50.degree. for 1 h, and pressed on a quartz plate at 150.degree. for 5 min to give a joint with 90.degree. peel strength >5 and .gtoreq.5 kg/cm after 0 and 5 days in H2O at 60.degree., compared with >6 and 0, resp., in the absence of the isocyanatosilane.

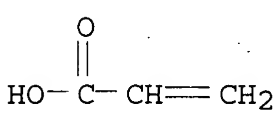
IT **9010-77-9**
(adhesive for joint sleeves for **optical fibers**)

RN 9010-77-9 HCA

CN 2-Propenoic acid, polymer with ethene (9CI) (CA INDEX NAME)

CM 1

CRN 79-10-7
CMF C3 H4 O2



CM 2

CRN 74-85-1
CMF C2 H4

IC ICM G02B006-24
ICS C09J007-00

CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 73

ST isocyanatosilane coupler joint fiber; acrylic acid copolymer adhesive; ethylene copolymer adhesive; silane isocyanatoalkyl coupler; vinyl acetate copolymer adhesive; adhesive joint **optical fiber**; coupler joint **optical fiber**

IT Coupling agents
((isocyanatoalkyl)silanes, for adhesive joint sleeves for

optical fibers)

IT **Fiber optics**
(adhesive sleeves for joints in, water-resistant)

IT Adhesives
(carboxylated polyolefins, for joint sleeves for **optical fibers**)

IT **9010-77-9**
(adhesive for joint sleeves for **optical fibers**
)

IT 24801-88-5
(coupler, for joint sleeves for **optical fibers**
)

IT 26713-18-8
(graft, adhesive for joint sleeves for **optical fibers**)

IT 280-57-9
(in adhesives for joint sleeves for **optical fibers**)

IT 14808-60-7, uses and miscellaneous
(**optical fibers**, adhesive joint sleeves for)

=> d l50 1-13 cbib abs hitstr hitind

L50 ANSWER 1 OF 13 HCA COPYRIGHT 2003 ACS on STN
138:171222 Cure monitoring of FW pipe by using EFPI **fiber optic** sensors. Kosaka, Tatsuro; Osaka, Katsuhiko; Sando, Masaya; Fukuda, Takehito (Department of Intelligent Materials Engineering, Osaka City University, Sumiyoshi-ku, Osaka, 558-8585, Japan). Proceedings of the Asian-Australasian Conference on Composite Materials (ACCM-2000) "Composites Technologies for the New Millennium", 2nd, Kyongju, Republic of Korea, Aug. 18-20, 2000, Volume 1, 271-276. Editor(s): Hong, Chang-Sun; Kim, Chun-Gon. Korean Society for Composite Materials: Taejon, S. Korea. ISBN: 89-951567-0-8 (English) 2000. CODEN: 69DBJU.

AB Smart composites with sensor functions can be used for cure and health monitoring, and **optical fiber** sensors are suitable for glass filament-wound (FW) molded **vinyl ester** resin composites. In this paper, internal strain measurements of FW pipe by embedding an extrinsic Fabry-Perot interferomenter (EFPI) **optical fiber** sensor were conducted. Some expts. were conducted to understand the relation between the internal strain and the curing state. It is found that the curing shrinkage can be measured by using the EFPI **optical fiber** sensor in the curing process of FW pipe. From the exptl. results in the after curing process, it is concluded that the embedding configuration **strongly** affects the sensor outputs.

CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 37

ST **vinyl ester** resin glass filament wound pipe crosslinking

IT Epoxy resins, uses
(acrylates; cure monitoring of glass filament wound pipe using **fiber optic** sensors)
IT Crosslinking
Pipes and Tubes
(cure monitoring of glass filament wound **vinyl ester** resin pipe using **fiber optic** sensors)
IT Glass fibers, uses
(cure monitoring of glass filament wound **vinyl ester** resin pipe using **fiber optic** sensors)
IT **Fiber optic** sensors
Viscosity
(in cure monitoring of glass filament wound **vinyl ester** resin pipe)
IT Contraction (mechanical)
(in cure monitoring of glass filament wound **vinyl ester** resin pipe using **fiber optic** sensors)
IT 62395-94-2, Ripoxy R802
(cure monitoring of glass filament wound pipe using **fiber optic** sensors)

L50 ANSWER 2 OF 13 HCA COPYRIGHT 2003 ACS on STN
138:171205 Internal strain measurement of FW FRP pipe with **optical fiber** sensors. Kosaka, T.; Osaka, K.; Sando, M.; Fukuda, T. (Department of Intelligent Materials Engineering, Osaka City University, Sumiyoshi-ku, Osaka, 558-8585, Japan). Proceedings of the United States-Japan Conference on Composite Materials, 9th, Mishima, Japan, July 3-4, 2000, 151-158. Editor(s): Fukuda, Hiroshi; Ishikawa, Takashi; Kogo, Yasuo. Japan Society for Composite Materials: Tokyo, Japan. ISBN: 4-931136-03-6 (English) 2000. CODEN: 69DAPX.
AB A smart manufg. is one of the most important technologies in the field of smart composites. **Fiber optic** sensors are suitable for smart composites as sensors and used to measure internal strain or temp. Then, sensor technologies using **optical fiber** sensors were studied for measurement of internal strain, temp. and detection of damages in composite laminates. High functional FW molded composites have abilities of the high reliability and the low total cost including maintenance cost. It is important to study the smart manufg. technique of FW molded composites for development of the practical products. In this paper, internal strain measurements of FW molded pipes with EFPI (Extrinsic Fabry-Perot Interferometer) **optical fiber** sensors were conducted in the curing process. A **vinyl ester** (RIPOXY) and an epoxy resin are used as the **matrix** resin. From the exptl. results of GF/Ripoxy pipe in the room temp. (RT) cure, the end of cure can be detected. At the curing stage of GF/Epoxy pipe, curing shrink was detected. Internal strain outputs of GF/Ripoxy pipe in the after curing

process shows large residual strain at the cooling stage due to the resin rich region around the embedded **optical fiber** sensor. Internal strain in GF/Epoxy pipe represented thermal shrink well. The internal strain of FW pipe can be measured with **optical fiber** sensor. Then, It is concluded that **optical fiber** sensors are useful for smart manufg. of FW molded composites, but more detail studies are necessary for quant. cure monitoring.

CC 38-3 (Plastics Fabrication and Uses)

ST strain measurement epoxy resin pipe **optical fiber** sensor

IT **Fiber optic** sensors
Pipes and Tubes
Strain
(internal strain measurement of epoxy resin FW FRP pipe with **optical fiber** sensors)

IT Epoxy resins, uses
(internal strain measurement of epoxy resin FW FRP pipe with **optical fiber** sensors)

IT 58421-55-9, Epikote 807 62395-94-2, RIPOXY R 802
(internal strain measurement of epoxy resin FW FRP pipe with **optical fiber** sensors)

L50 ANSWER 3 OF 13 HCA COPYRIGHT 2003 ACS on STN

138:73866 Characterization of **fiber optic** sensors for structural health monitoring. Lee, Dong Gun; Mitrovic, Milan; Friedman, Andrew; Carman, Greg P.; Richards, Lance (Department of Mechanical and Aerospace Engineering, UCLA, Los Angeles, CA, 90095, USA). Journal of Composite Materials, 36(11), 1349-1366 (English) 2002. CODEN: JCOMBI. ISSN: 0021-9983. Publisher: Sage Publications Ltd..

AB The thermomech. response of extrinsic Fabry-Perot interferometric **fiber optic** strain sensors (EFPI-FOSS) was studied, to det. the accuracy, **strength**, and durability of bare, (nonembedded) EFPI sensors and embedded **optical fiber** sensors in either a neat resin or aerospace grade composite laminates. The **optical fibers** are silica glass fibers (core and cladding) coated with a thin protective layer of polyimide. The composite test coupons were fabricated with Derakane 411 epoxy **vinyl ester**, alone and with graphite fibers and with AS4/3501-6 graphite fiber/epoxy as cured laminates. The embedded EFPI sensors provide reliable strain measurements for values exceeding 10,000 .mu..epsilon. under static loading conditions. The long term tension-tension fatigue behavior of **optical fiber** sensors was evaluated. Test data suggest that EFPI sensors provide reliable data up to 1 million cycles at fatigue strain levels below 3,000 .mu..epsilon.. For fatigue strain levels above this value, failure of the **fiber optic** sensor was obsd. While the sensor failed it did not influence the **strength** and fatigue life of the composite coupons. Considering the design strains used in aerospace components, these results provide evidence

that the EFPI sensors will survive during the life of typical aerospace structures.

CC 37-5 (Plastics Manufacture and Processing)
Section cross-reference(s): 57, 73

ST **optical fiber** sensor embedded composite structure tension fatigue; graphite fiber epoxy composite strain measurement **fiber optic** sensor; aerospace structure graphite epoxy composite embedded sensor fatigue life

IT Carbon fibers, properties
(composites, test composites with epoxy; performance of **fiber optic** sensors in monitoring of structural composites for aerospace structures)

IT Carbon fibers, properties
(graphite, test composite with epoxy; performance of **fiber optic** sensors in monitoring of structural composites for aerospace structures)

IT Glass **fibers**, uses
(**optical fiber** core and cladding; performance of **fiber optic** sensors in monitoring of structural composites for aerospace structures)

IT Polyimides, uses
(**optical fiber** protective layer; performance of **fiber optic** sensors in monitoring of structural composites for aerospace structures)

IT Fatigue, mechanical
Fiber optic sensors
Fiber-**reinforced** composites
Optical fibers
Strain
(performance of **fiber optic** sensors in monitoring of structural composites for aerospace structures)

IT Space vehicles
(structural composites; performance of **fiber optic** sensors in monitoring of structural composites for aerospace structures)

IT Epoxy resins, properties
(test composite with graphite fibers; performance of **fiber optic** sensors in monitoring of structural composites for aerospace structures)

IT 7631-86-9, Silica, uses
(**optical fiber** core and cladding; performance of **fiber optic** sensors in monitoring of structural composites for aerospace structures)

IT 39290-46-5, Derakane 411 63804-34-2, Hercules 3501-6
(test composite with graphite fibers; performance of **fiber optic** sensors in monitoring of structural composites for aerospace structures)

L50 ANSWER 4 OF 13 HCA COPYRIGHT 2003 ACS on STN

134:208552 Micro- and meso-level residual stresses in glass-fiber/ **vinyl-ester** composites. Andersson, Borje; Sjogren, Anders; Berglund, Lars (Structures Department, The

Aeronautical Research Institute of Sweden, Bromma, SE-161 11, Swed.). Composites Science and Technology, 60(10), 2011-2028 (English) 2000. CODEN: CSTCEH. ISSN: 0266-3538. Publisher: Elsevier Science Ltd..

AB Residual stresses in glass fiber/epoxy **vinyl ester** resin composites were studied on the micro and meso scales by computational and exptl. methods. The resin is Norpol Cor VE 8515 and the glass fibers have mean diam. of 23 .mu.m and were surface treated with poly(vinyl alc.) for a weak interface, and with a mixt. of methacrylate-silane coupling agent and an unsatd. polyester as film former, for a **strong** interface. Transmitted polarized light images of thin sections were compared with 3D finite-element solns. of a sample contg. 1410 fibers. Calcd. point-wise stresses were derived from a linear thermoelastic model with negligibly small numerical errors. Regions with calcd. max. compressive stress showed good agreement with exptl. obsd. optical bands. A material with poor interfacial adhesion showed weaker **optical** effects indicating **fiber/matrix** debonding. Irreversible **matrix** deformation and debonding can take place in the curing phase.

CC 37-5 (Plastics Manufacture and Processing)
Section cross-reference(s): 38, 57

ST glass fiber epoxy **vinyl ester** composite stress; residual stress curing resin glass fiber composite; interfacial adhesion debonding stress composite optical transmittance

IT Epoxy resins, properties
(acrylates; residual stress and deformation and debonding in glass fiber/**vinyl ester** resin composites at micro level detd. by photoelastic effect observations and modeling)

IT Polysiloxanes, uses
(acrylic, surface treatment agent; residual stress and deformation and debonding in glass fiber/**vinyl ester** resin composites at micro level detd. by photoelastic effect observations and modeling)

IT Adhesion, physical
(interfacial; residual stress and deformation and debonding in glass fiber/**vinyl ester** resin composites at micro level detd. by photoelastic effect observations and modeling)

IT Polymer morphology
(phase; residual stress and deformation and debonding in glass fiber/**vinyl ester** resin composites at micro level detd. by photoelastic effect observations and modeling)

IT Acrylic polymers, uses
(polysiloxane-, surface treatment agent; residual stress and deformation and debonding in glass fiber/**vinyl ester** resin composites at micro level detd. by photoelastic effect observations and modeling)

IT Crosslinking
Polarized light
(residual stress and deformation and debonding in glass fiber/

vinyl ester resin composites at micro level
detd. by photoelastic effect observations and modeling)

IT Glass fibers, properties
(residual stress and deformation and debonding in glass fiber/**vinyl ester** resin composites at micro level detd. by photoelastic effect observations and modeling)

IT Stress, mechanical
(residual; residual stress and deformation and debonding in glass fiber/**vinyl ester** resin composites at micro level detd. by photoelastic effect observations and modeling)

IT Polyesters, uses
(unsatd., surface treatment agent; residual stress and deformation and debonding in glass fiber/**vinyl ester** resin composites at micro level detd. by photoelastic effect observations and modeling)

IT 226706-30-5, Norpol Cor VE 8515
(residual stress and deformation and debonding in glass fiber/**vinyl ester** resin composites at micro level detd. by photoelastic effect observations and modeling)

IT 9002-89-5, Poly(vinyl alcohol)
(surface treatment agent; residual stress and deformation and debonding in glass fiber/**vinyl ester** resin composites at micro level detd. by photoelastic effect observations and modeling)

L50 ANSWER 5 OF 13 HCA

131:287225 Experimental investigation for validation of the thermo-mechanical response of **vinyl ester** resin.

Flores, F.; Bogetti, T. A.; Fink, B. K.; Heider, D.; Gillespie, J. W., Jr. (Center for Composite Materials, University of Delaware, Newark, DE, 19716, USA). Proceedings - ASC Technical Conference on Composite Materials, 13th, Baltimore, Sept. 21-23, 1998, 718-730. Editor(s): Vizzini, Anthony J.; Uleck, Kevin R. American Society for Composites: Los Angeles, Calif. (English) 1998. CODEN: 67WMAX.

AB In this paper we study the cure behavior of a room temp. viny lester resin typically used in VARTM (Vacuum Assisted Resin Transfer Molding) processes. For glass **reinforced vinyl ester** composites, uncontrolled temp. exotherms with rapid cure rate variations combined with large volumetric chem. shrinkage are potential mechanisms for significant residual stress and deformation development during the curing process. Residual stress and warpage due to thermal cool down from the material glass transition temp. are of equal concern. Evidence of such stress and deformation development during processing has been obsd. in the manuf. of large scale **vinyl ester** composite structures. Differential Scanning Calorimetry (DSC) and Torsional Braid Anal. (TBA) techniques have recently been employed in the thermo-chem. and thermo-mech. characterization of **vinyl ester** resin during cure. Independent validation of the reported thermo-mech. response for the **vinyl ester** resin are pursued in this study. Here we investigate an exptl. method to measure and validate the reported resin behavior. A

bimaterial strip specimen (comprised of pure resin cured onto an aluminum substrate) was monitored (temp. and warpage) during cure to provide insight into the potential mechanisms for process-induced stress and warpage development. A Bragg grating **fiber optic** sensor was embedded into the resin portion of the bimaterial specimen in an attempt to gain further insight into the thermo-mech. resin response. Expts. with varying resin thicknesses were performed. For all specimens studied, the aluminum was found to be too stiff to allow quant. interpretation of the specimen response (insufficient warpage). The Bragg grating **fiber optic** sensor, however, was found to be more useful as an in-situ monitoring device as it was able to reliably measure the in-plane contraction of the bimaterial specimen during cure. Future efforts will focus on exploiting the Bragg sensor technol. as a viable thermo-mech. characterization device for investigating the cure behavior of the **vinyl ester** resin and **reinforced vinyl ester** composites.

CC 37-6 (Plastics Manufacture and Processing)
Section cross-reference(s): 38

ST **vinyl ester** resin glass fiber **reinforced** crosslinking

IT Epoxy resins, reactions
(acrylates; cure behavior of **vinyl ester** resin used in vacuum assisted resin transfer molding)

IT Crosslinking
Glass transition
(cure behavior of **vinyl ester** resin used in vacuum assisted resin transfer molding)

IT Glass fibers, properties
(cure behavior of **vinyl ester** resin used in vacuum assisted resin transfer molding)

IT Molding of plastics and rubbers
(transfer, vacuum assisted; cure behavior of **vinyl ester** resin used in vacuum assisted resin transfer molding)

IT 39290-46-5
(cure behavior of **vinyl ester** resin used in vacuum assisted resin transfer molding)

L50 ANSWER 6 OF 13 HCA COPYRIGHT 2003 ACS on STN

130:223895 Optical coherence tomography of glass **reinforced** polymer composites. Dunkers, Joy P.; Parnas, Richard S.; Zimba, Carl G.; Peterson, Richard C.; Flynn, Kathleen M.; Fujimoto, James G.; Bouma, Brett E. (Polymers Division, National Institute of Standards and Technology, Gaithersburg, MD, 20899, USA). Composites, Part A: Applied Science and Manufacturing, Volume Date 1999, 30A(2), 139-145 (English) 1998. CODEN: CASMFJ. ISSN: 1359-835X. Publisher: Elsevier Science Ltd..

AB Optical coherence tomog. (OCT) is a nondestructive and noncontact technique to image microstructure within scattering media. The application of OCT to highly scattering materials such as polymer composites is esp. challenging. In this work, OCT is evaluated as a

technique to image fiber tows and voids in two materials: an epoxy E-glass-**reinforced** composite and a **vinyl ester** E-glass-**reinforced** composite. Features detected using OCT are compared with optical microscopy. Fiber architecture and voids of glass-**reinforced** polymer composites can be successfully imaged using OCT. The quality of the OCT image is **strongly** affected by the refractive index mismatch between the fibers and **reinforcement**. The largest sources of noise in the images arise from fiber lens effects, interference from within the sample, and a very large reflection at the surface.

CC 37-5 (Plastics Manufacture and Processing)

ST glass **fiber** composite **optical** coherence tomog; epoxy glass composite optical coherence tomog; **vinyl ester** resin optical coherence tomog

IT Glass fiber fabrics
(Knytex D155; optical coherence tomog. of epoxy and **vinyl ester** resins **reinforced** by)

IT Epoxy resins, properties
(acrylates; optical coherence tomog. of glass fabric **reinforced** composites)

IT Refractive index
(in optical coherence tomog. of glass fabric **reinforced** composites)

IT Epoxy resins, properties
(optical coherence tomog. of glass fabric **reinforced** composites)

IT Tomography
(optical coherence; of glass fabric **reinforced** epoxy and **vinyl ester** resin composites)

IT 169275-35-8, Derakane 411-C50 homopolymer 172424-99-6, Jeffamine D 400-methylenedianiline-Tactix 123 copolymer
(optical coherence tomog. of glass fabric **reinforced** composites)

L50 ANSWER 7 OF 13 HCA COPYRIGHT 2003 ACS on STN

125:13467 Rapid-curing polyester-based **optical fiber** coatings with reduced moisture absorption and water-soluble contents and hydrogen generation and good oxidation resistance. Snyder, James Ronald; Green, George David; Levy, Alvin Charles; Swedo, Raymond John (Alliedsignal Inc., USA). PCT Int. Appl. WO 9606142 A1 19960229, 52 pp. DESIGNATED STATES: W: CA, JP, KR; RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1995-US9674 19950801. PRIORITY: US 1994-293614 19940819.

AB **Optical fiber** coatings may be prepd. from compns. contg. one or more **vinyl** ether **polyester** oligomers prepd. by reacting an hydroxyl-terminated polyester or polyether, a polyol, and a hydroxy monovinyl ether, with one or more mono- or multifunctional vinyl ether terminated monomers, which may be derived from esters or alcs. A **vinyl** ether-terminated **polyester** oligomer (I) was prepd. by reacting 890 g of

hydroxybutyl vinyl ether with 4452 g of di-Me isophthalate, 4056 g THF polymer, and 600 g of bishydroxymethyltricyclodecane in 2 steps in the presence of dibutyltin diacetate, and another **vinyl** ether-terminated **polyester** oligomer (II) by reacting 2699 g hydroxybutyl vinyl ether, 4526 di-Me isophthalate, and 3050 g of bishydroxymethyltricyclodecane by similar manner. A secondary (outer) coating was formulated from 65% II and 35% VE 4010 (hydroxybutyl vinyl ether-dimethyl isophthalate reaction product) with 0.8 pph UVI-6974 triarylsulfonium salt and 2.6025 pph stabilizers, and a primary (inner) coating from 80% I, 15% VE 4010, and 5% VEX 3010 (hydroxybutyl vinyl ether-Me benzoate reaction product) with 0.8 pph UVI-6974 and 3.5025 pph stabilizers., giving photocured products with modulus 767 and 1.2 MPa, resp., **elongation** at break 21 and 80%, resp., water absorption (24 h immersion) 1.2 and 0.6%, resp., and water extractables (24 h immersion) 2.0 and 0.6%, resp.

IC ICM C09D167-07
ICS C09D004-06; C08F290-14; C03C025-02

CC 42-10 (Coatings, Inks, and Related Products)

ST **vinyl** terminated **polyester** photocurable coating; **optical fiber** photocurable coating water resistant; antioxidant **optical fiber** coating; hydrogen generation resistant **optical fiber** coating

IT **Optical fibers**
(rapid-curing polyester-based **optical fiber** coatings with reduced moisture absorption and water-sol. contents and hydrogen generation and good oxidn. resistance)

IT Crosslinking agents
(photochem., rapid-curing polyester-based **optical fiber** coatings with reduced moisture absorption and water-sol. contents and hydrogen generation and good oxidn. resistance)

IT Coating materials
(photocurable, water-resistant, rapid-curing polyester-based **optical fiber** coatings with reduced moisture absorption and water-sol. contents and hydrogen generation and good oxidn. resistance)

IT **Polyesters**, uses
(**vinyl** group-terminated, rapid-curing polyester-based **optical fiber** coatings with reduced moisture absorption and water-sol. contents and hydrogen generation and good oxidn. resistance)

IT 93-58-3D, Methyl benzoate, reaction products with hydroxybutyl vinyl ether 1459-93-4D, Dimethyl isophthalate, reaction products with hydroxybutyl vinyl ether 2459-10-1D, Trimethyl trimellitate, reaction products with hydroxybutyl vinyl ether 17832-28-9D, reaction products with esters
(photocrosslinking agents; rapid-curing polyester-based **optical fiber** coatings with reduced moisture absorption and water-sol. contents and hydrogen generation and good oxidn. resistance)

IT 177578-48-2P 177578-49-3P 177578-50-6P 177578-51-7P
(rapid-curing polyester-based **optical fiber** coatings with reduced moisture absorption and water-sol. contents and hydrogen generation and good oxidn. resistance)

L50 ANSWER 8 OF 13 HCA COPYRIGHT 2003 ACS on STN
119:228068 Adhesive properties of polymer coatings from polyarylate-polysiloxane block copolymers. Tolchinskaya, R. E.; Tagirov, A. Ya.; Nanushyan, S. R.; Yeremenko, M. G.; Pechenin, V. A.; Sheludyakov, V. D.; Zagorets, I. I. (Gos. Nauchno-Issled. Inst. Khim. Tekhnol. Elementoorg. Soedin., Moscow, Russia). Mekhanika Kompozitnykh Materialov (1), 147-51 (Russian) 1992. CODEN: MKMADT. ISSN: 0203-1272.

AB Adhesion of secondary coatings for optical waveguides was studied by drawing steel fibers out of **matrix** of block arom. cardo polyester-siloxane (ACPS). Concn. and compn. effect of siloxane blocks of ACPS on the adhesion **strength** of quartz **optical fiber**-primary siloxane (SIEL 1 or 2) coating-secondary ACPS coating systems was studied for a wide range of ACPS coatings differing in mol. wts. (2110-9640) and siloxane substituents (di-Me, di-Et, Me H, Me vinyl, or their combinations). The coatings were addnl. treated either at 200.degree. during 7 h or with accelerated electron beam at doses .ltoreq. 4000 kGy. Variations in ACPS compn. and coating treatment conditions led to the changes of adhesion **strength** in 0.03-10.5 MPa range.

CC 42-10 (Coatings, Inks, and Related Products)

IT Electron beam
(adhesion **strength** of arom. cardo block polyester-siloxane secondary coatings for waveguides treated by)

IT Coating materials
(for optical waveguides, secondary, arom. cardo block polyester-siloxane, adhesion **strength** of, effect of coating treatment and mol. wt. and compn. of siloxane blocks on)

IT **Polyesters**, uses
(Me **vinyl** siloxane-, arom., block, cardo, coatings, steel fiber or siloxane adhesion to, effect of coating treatment and mol. wt. of siloxane blocks on)

IT Siloxanes and Silicones, uses
(Me **vinyl**, **polyester**-, arom., block, cardo, coatings, steel fiber or siloxane adhesion to, effect of coating treatment and mol. wt. of siloxane blocks on)

IT Cardo polymers
(arom. **polyester**-Me **vinyl** siloxanes, block, coatings, steel fiber or siloxane adhesion to, effect of coating treatment and mol. wt. of siloxane blocks on)

IT Siloxanes and Silicones, properties
(di-Me, coatings, primary, for optical waveguides, adhesion **strength** of arom. cardo block polyester-siloxane secondary coatings to)

IT Siloxanes and Silicones, properties
(di-Me, Me **vinyl**, **polyester**-, arom., block, cardo, coatings, steel fiber or siloxane adhesion to, effect of

coating treatment and mol. wt. of siloxane blocks on)

IT Waveguides
(**optical**, **fiber**, coatings for, from secondary arom. cardo block polyester-siloxanes, effect of coating treatment and mol. wt. and compn. of siloxane blocks on adhesion **strength** of)

L50 ANSWER 9 OF 13 HCA COPYRIGHT 2003 ACS on STN

118:8370 Compositions of vinyl ether monomers and vinyl ether derivatives of urethane oligomers, and **optical fibers** coated with them. Lapin, Stephen Craig; Levy, Alvin Charles (Allied-Signal Inc., USA). PCT Int. Appl. WO 9204388 A1 19920319, 33 pp. DESIGNATED STATES: W: AU, BB, BG, BR, CA, FI, HU, JP, KP, KR, LK, MC, MG, MW, NO, PL, RO, SD, SU; RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LU, NL, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1991-US4233 19910613. PRIORITY: US 1990-574705 19900829.

AB Rapid-curing compns. giving coatings with good low-temp. properties and water resistance for **optical fibers** contain **vinyl** ether-terminated **esters**, **vinyl** ethers, and reaction products of hydroxy monovinyl ethers, polyisocyanates, and hydroxy-terminated polyesters or polyethers with d.p. 1-100. Thus, a compn. contg. poly(propylene adipate)-modified MDI-4-(hydroxymethyl)cyclohexylmethyl vinyl ether adduct 1,4-cyclohexanedimethanol divinyl ether (I) soln. 55, I 10, bis[4-(vinyloxy)butyl] isophthalate 15, bis[4-(vinyloxy)butyl] succinate 20, and photoinitiator 0.5 part was applied to a glass plate with a 3-mil applicator and exposed to a Hg arc lamp with a dose of 0.5 J/cm2 to give a coating with breaking **elongation** 18%, elastic modulus 1000 MPa at 1 Hz, wt. change 2% after 24 h in water, and dose-to-full-cure 0.3-0.5 J/cm2, useful for outer layers on **optical fibers**.

IC ICM C08F299-06
ICS C09D175-16; G02B006-02

CC 42-10 (Coatings, Inks, and Related Products)
Section cross-reference(s): 57, 73

ST vinyl polyurethane photocured coating; **optical fiber** photocured coating; polypropylene adipate vinyl polyurethane coating; vinyloxymethylcyclohexanemethanol polyester polyurethane coating; vinyloxybutyl isophthalate vinyl polyurethane coating; succinate vinyloxybutyl vinyl polyurethane coating; water resistance **optical fiber** coating

IT **Optical fibers**
(coatings for, water-resistant, UV-cured vinyl ether-crosslinked **vinyl polyester**-polyurethanes as)

IT Coating materials
(UV-curable, water-resistant, **vinyl**-terminated **polyester**-polyurethane-based, for **optical fibers**)

IT Urethane polymers, uses
(**polyester-**, **vinyl** group-terminated, coatings, UV-cured vinyl ether-crosslinked water-resistant, for

optical fibers)

IT Urethane polymers, uses
(polyether-, vinyl group-terminated, coatings, UV-cured vinyl ether-crosslinked water-resistant, for **optical fibers**)

IT 17351-75-6, 1,4-Cyclohexanedimethanol divinyl ether 17832-28-9D, 4-Hydroxybutyl vinyl ether, reaction products with polyester-polyurethanes 80675-03-2D, reaction products with [(hydroxymethyl)cyclohexyl]methyl vinyl ether 114651-37-5D, 4-(Hydroxymethyl)cyclohexylmethyl vinyl ether, reaction products with polyester-polyurethanes 130066-57-8 131132-77-9 135876-32-3 144429-21-0, 4-(Vinyloxy)butyl benzoate 144429-22-1, 2-(2-Ethylhexyloxy)ethyl vinyl ether 144974-54-9D, reaction products with hydroxybutyl vinyl ether
(photocurable coating compns. contg., for **optical fibers**)

L50 ANSWER 10 OF 13 HCA COPYRIGHT 2003 ACS on STN

116:244803 Increase of stability of IR waveguides of chalcogenide oxygen-free glasses. Batyaeva, L. I.; Volkov, N. M.; Glebova, L. N.; Kanchiev, Z. I.; Men'shikov, A. A.; Molev, V. I.; Shepurev, E. I.; Yagmurov, V. Kh. (GOI, USSR). Optiko-Mekhanicheskaya Promyshlennost (10), 66-8 (Russian) 1991. CODEN: OPMPAQ. ISSN: 0030-4042.

AB Polymer coatings based on **vinyl ester** resins, applied to IR fibers made from glasses of the system As-S-Se in the course of drawing out and hardening by UV-radiation, cause a significant increase in the mech. **strength** of the fiber toward breaking without making worse its optical characteristics. The **strength** of the fibers obtained in a neutral gas medium in the bulb, exceeds by 1.4-1.7 fold the **strength** of fibers drawn out in the usual medium. The **vinyl ester** resins were synthesized from halogen-contg. epoxide resins of grades UP-655 and UP-631 with a photoinitiator, e.g. the iso-Bu ester of benzoin.

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST IR waveguide fiber stability; oxygenfree chalcogenide glass fiber; **vinyl ester** resin coating chalcogenide fiber; arsenic sulfur selenium glass IR fiber

IT **Optical fibers**
(IR, stability increase of)

L50 ANSWER 11 OF 13 HCA COPYRIGHT 2003 ACS on STN

114:166451 Free-radical curable **vinyl** ether oligomer-**polyester** compositions. Noren, Gerry K.; Krajewski, John J.; Zimmerman, John M.; Shama, Sami A. (DeSoto, Inc., USA). PCT Int. Appl. WO 9010660 A1 19900920, 62 pp. DESIGNATED STATES: W: AU, CA, JP; RW: AT, BE, CH, DE, DK, ES, FR, GB, IT, LU, NL, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1990-US1243 19900307. PRIORITY: US 1989-319566 19890307; US 1989-404578 19890908; US 1989-437374 19891115.

AB Soft and flexible, low-toxicity coatings are prepd. from compns. contg. (A) .gtoreq. 1 oligomer contg. .gtoreq.1 electron-rich ethylenically unsatd. group and/or a satd. polyester contg. .gtoreq.1 electron deficient ethylenically unsatd. end group, and (B) .gtoreq.1 of functional diluent, mixt. of functional diluents, and a dual functional monomer; where electron-rich double bond/electron deficient double bond ratio 5-1:1-5. A compn. contg. IPDI-Tone 2201 copolymer (1:1 equiv.) reaction product with 4-hydroxybutyl vinyl ether 83.6, di-Et maleate 13.4, phenothiazine 0.1, and Lucirin TPO 2.9% was applied on glass plates and cured at <1.0 J/cm2 to give coatings suitable for **optical fibers** having tensile **strength** 4.6 MPa, **elongation** 150%, and water absorption (24 h immersion) 0.7%, vs. 1.4, 80, and 2.0, resp., for a com. acrylate coating compn.

IC ICM C08G065-34
ICS C08L071-02; B32B017-10; G02B006-02

CC 42-10 (Coatings, Inks, and Related Products)
Section cross-reference(s): 39, 43

ST vinyl ether oligomer coating photocurable; **ester vinyl** ether diluent; urethane vinyl ether adduct; ethyl maleate diluent coating; polyester unsatd coating photocurable; **optical fiber** glass coating photocurable; soft flexible photocurable coating photocurable

IT Concrete
Leather
Optical fibers
Paper
Textiles
Rubber, butadiene-styrene, uses and miscellaneous
(coatings for, contg. vinyl ether oligomer and/or polyester, radically-curable)

IT Coating materials
(flexible, free-radically curable, vinyl ether oligomer and/or polyester, for **optical** glass **fibers**)

IT Rubber, urethane, compounds
(reaction products, with hydroxybutyl vinyl ether, for coatings for **optical** glass **fibers**)

IT Fatty acids, polymers
(unsatd., dimers, reaction products, with Butyl Carbitol ester of isocyanurate compd., for coatings for **optical** glass **fibers**)

IT 132878-87-6D, reaction product with hydroxybutyl vinyl ether
132910-22-6D, reaction product with hydroxybutyl vinyl ether
(coatings contg, with dual functional monomer and diluent, radically-curable, flexible, for **optical** glass **fibers**)

IT 17832-28-9D, 4-Hydroxybutyl vinyl ether, urethane adduct
(coatings contg., with dual functional monomer and diluent, radically-curable, flexible, for **optical** glass **fibers**)

IT 133174-34-2D, reaction product with dimer acid 133174-35-3
133200-41-6

(coatings contg., with vinyl ether diluent, for **optical** glass **fibers**)

IT 141-05-9, Diethyl maleate
(coatings contg., with vinyl ether oligomer and dual functional monomer, radically-curable, for **optical** glass **fibers**)

IT 765-12-8, 3,6,9,12-Tetraoxatetradeca-1,13-diene
(coatings contg., with vinyl ether oligomer in dual functional monomer, radically-curable, for **optical** glass **fibers**)

IT 17832-28-9, 4-Hydroxybutyl **vinyl** ether
(**esterification** of, with di-Et maleate)

L50 ANSWER 12 OF 13 HCA COPYRIGHT 2003 ACS on STN

113:134275 Ultraviolet-curable cationic vinyl ether polyurethane coating compositions for **optical fibers**. Shama, Sami A.; Poklacki, Erwin S.; Zimmerman, John M. (DeSoto, Inc., USA). PCT Int. Appl. WO 9002614 A1 19900322, 26 pp. DESIGNATED STATES: W: AU, DK, FI, JP, NO; RW: AT, BE, CH, DE, FR, GB, IT, LU, NL, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1989-US3980 19890913. PRIORITY: US 1988-243794 19880913.

AB Liq. title compns., useful for 2.5-6-mil-thick primary or single layers on **optical fibers**, contain a cationic photoinitiator, C1-10 alkylenebis(phenylene isocyanates), and NCO-reactive compds. including a monohydric vinyl ether, with the polyurethane having no.-av. mol. wt. (Mn) 2000-6000. Thus, heating 20.91 parts MDI to 60.degree., adding 22.77 parts 1,4-butanediol divinyl ether (I), adding 4-hydroxybutyl vinyl ether in 10 min, heating 2 h at 60.degree., adding an appropriate amt. of Tone 220 (Mn 1000, diethylene glycol-initiated polycaprolactone) and 0.06 parts dibutyltin dilaurate in 10 min, and heating at 70.degree. until the NCO content was >0.1% gave a I-modified resin with Mn 2400. A compn. (viscosity 1540 s, n 1.488) contg. this I-modified resin 72, triethylene glycol divinyl ether 27.5, and UVE 1016 (50% active) photoinitiator was applied at 3-mil drawdown on a glass plate and cured with a 12-in D lamp at 1/cm2 to give a coating with tensile **strength** 12 MPa, **elongation** 38%, modulus 60, and water absorption 4.7% (free coating was immersed 24 h in water).

IC ICM B05D003-06

CC 42-10 (Coatings, Inks, and Related Products)
Section cross-reference(s): 37, 57

ST photocurable cationic vinyl polyurethane coating; **optical fiber** photocurable polyurethane coating; polycaprolactone polyurethane vinyl photocurable coating; **polyester** polyurethane **vinyl** photocurable coating; MDI vinyl polyurethane photocurable coating

IT **Optical fibers**
(photocurable coatings for, vinyl ether-terminated polyurethanes as)

IT Coating materials
(UV-curable, vinyl ether-terminated polyurethane, for

optical fibers)

IT 129457-80-3P 129458-67-9P 129471-97-2P
(manuf. of, as photocured coatings, for **optical fibers**)

IT 17832-28-9DP, 4-Hydroxybutyl vinyl ether, reaction products with polyester polyurethanes 26428-46-6DP, reaction products with hydroxybutyl vinyl ether 55279-65-7DP, reaction products with hydroxybutyl vinyl ether 129458-68-0DP, reaction products with hydroxybutyl vinyl ether
(manuf. of, for photocurable coatings for **optical fibers**)

L50 ANSWER 13 OF 13 HCA COPYRIGHT 2003 ACS on STN

109:56205 Polymers of vinylbenzyl-containing compounds for optical applications. Murata, Takashige; Koinuma, Yasuyoshi; Sano, Yoshio; Mogami, Takao (Nippon Oils and Fats Co., Ltd., Japan; Seiko Epson Corp.). Jpn. Kokai Tokkyo Koho JP 63015811 A2 19880122 Showa, 6 (Japanese). CODEN: JKXXAF. APPLICATION: JP 1986-157183 19860705.

AB Vinylbenzyloxy group-contg. monomers H2C:CHZCH2ACH2ZCH:CH2 [A = O(CH2)nO, O(CH2CHR1O)n, O2C(CH2)nCO2, O2CCH:CHCO2, O2CCH2C(:CH2)CO2, O2CCMe:CHCO2, O(CHR1CH2O)n-p-C6H4CR2-p-C6H4(OCH2CHR1)mO, O2CZCO2; Z = phenylene; R, R1 = H, Me; m, n = 0-10] are prepd. and used to prep. polymers which have a high refractive index, are resistant to heat and impact, and are useful as lenses and **optical fibers**. Heating (chloromethyl)styrene 2, HOCH2CH2OH 1, and NaOH 3 mol with 1 g hydroquinone in 200 mL toluene at 100.degree. for 3 h gave 1,2-bis(vinylbenzyloxy)ethane which gave a polymer having refractive index 1.613, glass temp. 144.degree., high impact **strength**, and good resistance to acetone and benzene.

IC ICM C08F212-34
ICS G02B001-04

CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 25, 35, 37

ST vinylbenzyloxy deriv optical polymer; ether vinylbenzyl optical polymer; ester vinylbenzyl optical polymer; **fiber optical** vinylbenzyloxy polymer; lens vinylbenzyloxy polymer; refractive index vinylbenzyloxy polymer; heat resistance vinylbenzyloxy polymer; impact **strength** vinylbenzyloxy polymer; solvent resistance vinylbenzyloxy polymer; transparency vinylbenzyloxy polymer

IT Lenses
Optical fibers
(bis(vinylbenzyl) ethers and esters for polymeric)

IT Crosslinking agents
(bis(vinylbenzyl) ethers and **esters**, for **vinyl** polymers)

IT 115450-40-3P 115450-41-4P 115450-42-5P 115450-44-7P
115450-45-8P 115450-46-9P 115450-47-0P 115450-48-1P
115450-49-2P 115450-50-5P 115450-51-6P 115450-52-7P
115510-27-5P 115510-28-6P
(prepn. of, for lenses and **optical fibers**)

=> d l55 1-11 cbib abs hitstr hitind

L55 ANSWER 1 OF 11 HCA COPYRIGHT 2003 ACS on STN

128:168853 Polyester based **optical fiber** coating compositions and **optical fibers** coated therewith. Snyder, James Ronald; Green, George David; Levy, Alvin Charles; Swedo, Raymond John (Alliedsignal Inc., USA). PCT Int. Appl. WO 9805721 A1 19980212, 56 pp. DESIGNATED STATES: W: AL, AU, BB, BG, BR, CA, CN, CU, CZ, EE, GE, GH, HU, IL, IS, JP, KP, KR, LK, LR, LS, LT, LV, MG, MK, MN, MW, MX, NZ, PL, RO, RU, SD, SG, SI, SK, SL, TR, TT, UA, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO 1997-US11058 19970624. PRIORITY: US 1996-672007 19960624.

AB The title compns. consist essentially of reaction products of (a) a **vinyl** ether **polyester** oligomer consisting essentially of the reaction product of (i) a polybasic acid R7O2CYbCO[(OXaO2CYaCO)m(OXbO2CYbCO)z]wOR7 (R7 = Ph, C1-6 alkyl; Xa, Xb, Ya, Yb = alkyl, aryl, aralkyl, cycloalkyl; j = 0-2; z = 0-100; m = 0-100; w = 1, 2; excluding m = z = 0); and (ii) hydroxy monovinyl ether R1CH:C(R2)OXaOH (R1, R2 = H, C1-6 alkyl; Xa = alkylene, cycloalkylene, oxyalkylene); and (iii) polyols H(OXb)n(OXa)mOH (Xa, Xb = alkyl, aryl, aralkyl, cycloalkyl; n = 0-100; m = 0-100; excluding m = n = 0) and either or both of (b) a **vinyl** ether-terminated **ester** monomer Y'[CO2XaOC(R3):CHR4]w (w = 1-4; Y' = functional alkylene, arylene, aralkylene, cycloalkylene residue; Xa = alkylene, cycloalkylene; R3, R4 = H, C1-10 alkyl); and (c) vinyl ether-terminated monomer derived from alcs. D[OC(R5):CHR6]w (w = 1-4; R5 , R6 = H, Me; D = functional alkylene, cycloalkylene, oxyalkylene residue). A **vinyl** ether-terminated **polyester** oligomer for use in a primary **optical fiber** coating was prepd. by reacting 890 g hydroxybutyl vinyl ether with 4452 g di-Me isophthalate, 4056 g PTMG and 600 g bishydroxymethyltricyclodecane, and a **vinyl** -ether terminated **polyester** oligomer for used in a secondary **optical fiber** coating was prepd. by reacting 2699 g hydroxybutyl vinyl ether, 4526 g di-Me isophthalate, and 3050 g bishydroxymethyltricyclodecane, and both used together with hydroxybutyl vinyl ether-dimethyl isophthalate reaction product in the presence of UVI 6974 to obtain a two-ply **photocured** coating of soft interior and hard exterior.

IC ICM C09D167-07
ICS C08F290-14; C03C025-02

CC 42-13 (Coatings, Inks, and Related Products)

ST **vinyl** terminated **polyester photocured** coating; **optical fiber photocured** coating

IT Coating materials
(**photocurable**; polyester based **optical fiber** coating compns.)

IT **Optical fibers**
(polyester based **optical fiber** coating compns.)
IT Polyesters, uses
(polyester based **optical fiber** coating compns.)
IT Polyurethanes, uses
(polyester-; polyester based **optical fiber** coating compns.)
IT Polyurethanes, uses
(polyester-polyoxyalkylene-; polyester based **optical fiber** coating compns.)
IT 80-04-6DP, Hydrogenated bisphenol A, reaction products with bis(hydroxymethyl)tricyclodecane, di-Me isophthalate and hydroxybutyl vinyl ether, polymer with hydroxybutyl vinyl ether-dimethyl isophthalate and hydroxybutyl vinyl ether-tri-Me trimellitate reaction products 93-58-3DP, Methyl benzoate, reaction products with hydroxybutyl vinyl ether, di-Me isophthalate, and PTMG, polymers 1119-40-0DP, Dimethyl glutarate, reaction products with poly(propylene adipate)diol, modified MDI, 4-(hydroxymethyl)cyclohexylmethyl vinyl ether, and 1,4-Cyclohexanedimethanol divinyl ether 1459-93-4DP, Dimethyl isophthalate, reaction products with hydroxybutyl vinyl ether, PTMG, and bishydroxymethyltricyclodecane, polymers 2459-10-1DP, Trimethyl trimellitate, reaction products with hydroxybutyl vinyl ether, polymers with **vinyl**-terminated **polyester** oligomers 9016-87-9DP, reaction products with poly(propylene adipate)diol, 4-methylolcyclohexylmethyl vinyl ether, 1,4-cyclohexanedimethanol divinyl ether, and di-Me glutarate 17351-75-6DP, 1,4-Cyclohexanedimethanol divinyl ether, reaction products with poly(propylene adipate)diol, modified MDI, 4-(hydroxymethyl)cyclohexylmethyl vinyl ether, and di-Me glutarate 25101-03-5DP, Poly(propylene adipate), hydroxy-terminated, reaction products with modified MDI, 4-methylolcyclohexylmethyl vinyl ether. 1,4-cyclohexanedimethanol divinyl ether, and di-Me glutarate 25190-06-1DP, PTMG, reaction products with hydroxybutyl vinyl ether, di-Me isophthalate, and bishydroxymethyltricyclodecane, polymers 26160-83-8DP, Tricyclodecanedimethanol, reaction products with hydroxybutyl vinyl ether, di-Me isophthalate, and PTMG, polymers 27941-08-8DP, Poly(propylene adipate), hydroxy-terminated, reaction products with modified MDI, 4-methylolcyclohexylmethyl vinyl ether. 1,4-cyclohexanedimethanol divinyl ether, and di-Me glutarate 30340-74-0DP, polymer with PTMG divinyl ether and reaction products from poly(propylene adipate)diol, modified MDI, and 4-(hydroxymethyl)cyclohexylmethyl **vinyl** ether 42978-84-7DP, Hydroxybutyl vinyl ether, reaction products with di-Me isophthalate, PTMG, and bishydroxymethyltricyclodecane, polymers 114651-37-5DP, 4-(Hydroxymethyl)cyclohexylmethyl vinyl ether, reaction products with poly(propylene adipate)diol, modified MDI. 1,4-cyclohexanedimethanol divinyl ether, and di-Me glutarate 164978-32-9DP, polymer with hexyl ethoxyvinyl ether and reaction products from poly(propylene adipate)diol, modified MDI, and

4-(hydroxymethyl)cyclohexylmethyl **vinyl** ether
(**polyester** based **optical fiber**
coating compns.)

L55 ANSWER 2 OF 11 HCA COPYRIGHT 2003 ACS on STN
126:239182 Manufacture and uses of **photocurable** synthetic polymer compositions. Saito, Takao; Maeda, Kohei; Ozasa, Naoshi (Sanyo Chemical Industries, Ltd., Japan). Ger. Offen. DE 19632122 A1 19970213, 31 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1996-19632122 19960808. PRIORITY: JP 1995-225695 19950809; JP 1995-351791 19951225; JP 1996-129029 19960424; JP 1996-129028 19960424; JP 1996-131290 19960426.

AB Rapidly cured title compns. comprise (A) compds. having a (branched) polymer structure with a polyether-, **polyvinyl**-, **polyester**-, polyurethane-, polyamide-, polycarbonate-, and novolak-type main chain contg. .gtoreq.5, preferably .gtoreq.10 2-propenyloxy groups, and having mol. wt. .gtoreq.1000, and (B) a cationic **photopolymn**. initiator, e.g., a triarylsulfonium or diaryliodonium salt. Crosslinked title compns. and photoresists for printed circuit boards, printing inks, paper and metal coatings, **optical fiber** coatings, and adhesives contg. the compns. are also claimed. In a typical example, epichlorohydrin was polymd. with BF3.cntdot.Et2O, the polymer was etherified with polyethylene glycol monoallyl ether (prepn. given) in PhMe in the presence of KOH and Bu4NBr, the reaction mixt. heated to 170.degree. to produce a rearranged, 2-propenyloxy-terminated product which (80 parts) was combined with 20 parts MeCH:CHO(CH2CH2O)6H (prepn. given) and 5 parts UVR 6974 (**photopolymn**. initiator). When coated (20 .mu.m) on a Cu plate and UV-irradiated, the above compn. required minimal energy input of 20 mJ/cm2 to give a coating with pencil hardness H and good adhesion to the substrate.

IC ICM C08L029-10
ICS C08F116-20; C08F216-20; C08J003-28; C09D005-03; C09D011-10; C09D129-10; C09J129-10; G03F007-027; B05D007-16; C07C043-16

ICA C08J003-28

ICI C08L023-26, C08L061-06, C08L067-07, C08L069-00, C08L071-02, C08L075-16, C08L077-00

CC 37-6 (Plastics Manufacture and Processing)
Section cross-reference(s): 38, 42, 74

ST **photocurable** polymer compn rapid curing; polyethylene glycol propenyloxy terminated **photocurable** compn; polyepichlorohydrin etherification polyethylene glycol allyl ether; allylic rearrangement polyethylene glycol allyl ether; propenyl ether polyethylene glycol **photocurable** polymer; coating **UV cured** propenyloxy terminated polymer

IT Polyoxyalkylenes, preparation
(acrylate-terminated, polymers; manuf. and uses of **photocurable** synthetic polymer compns. contg. propenyl-terminated)

IT **Optical fibers**
Paper
(coatings, **photocurable**; manuf. and uses of

photocurable synthetic polymer compns. in)
IT Photoresists
(manuf. and uses of **photocurable** synthetic polymer compns. in)
IT Phenolic resins, preparation
(novolak, reaction products, with ethylene oxide, allyl ethers, allylic rearrangement products, polymers; manuf. and uses of **photocurable** synthetic polymer compns.)
IT Polyesters, preparation
(oligomeric, 2-propenyl-terminated, polymers; **photocurable** synthetic polymer compns. contg.)
IT Adhesives
Coating materials
(**photocurable**; manuf. and uses of **photocurable** synthetic polymer compns. in)
IT Polyoxyalkylenes, preparation
Polyoxyalkylenes, preparation
(polyester-; manuf. and uses of **photocurable** synthetic polymer compns. contg. propenyl-terminated)
IT Polyesters, preparation
Polyesters, preparation
(polyoxyalkylene-; manuf. and uses of **photocurable** synthetic polymer compns. contg. propenyl-terminated)
IT Inks
(printing, **photocurable**; manuf. and uses of **photocurable** synthetic polymer compns. in)
IT Polyoxyalkylenes, preparation
(propenyl-terminated, polymers; manuf. and uses of **photocurable** synthetic polymer compns. contg.)
IT 4098-71-9DP, Isophorone diisocyanate, reaction products with 2-propenyl-terminated polyoxyalkylenes, **polymers** 9002-89-5DP, Poly(vinyl alcohol), allyl ethers rearranged to 2-propenyl ethers, polymers with polyethylene glycol mono(2-propenyl) ether 24969-06-0DP, Polyepichlorohydrin, allyl ethers rearranged to 2-propenyl ethers, polymers with polyethylene glycol mono(2-propenyl) ether 25249-16-5DP, 2-Hydroxyethyl methacrylate polymer, allyl ethers rearranged to 2-propenyl ethers, polymers with polyethylene glycol mono(2-propenyl) ether 25722-70-7DP, Polyglycide, allyl ethers rearranged to 2-propenyl ethers, polymers with polyethylene glycol mono(2-propenyl) ether 25723-16-4DP, Polypropylene glycol trimethylolpropane ether, allyl ethers rearranged to 2-propenyl ethers, **polymers** 25791-96-2DP, Polypropylene glycol glycerol ether, allyl ethers rearranged to 2-propenyl ethers, **polymers** 26022-14-0DP, 2-Hydroxyethyl acrylate polymer, allyl ethers rearranged to 2-propenyl ethers, polymers with polyethylene glycol mono(2-propenyl) ether 26282-59-7DP, Allyl glycidyl ether-Ethylene oxide copolymer, allylic rearrangement products, reaction products with isophorone diisocyanate and polyethylene glycol 2-propenyl monoether, **polymers** 26471-62-5DP, TDI, reaction products with polyethylene glycol 2-propenyl monoether and hydroxyethyl acrylate, **polymers** 27274-31-3DP, Polyethylene glycol

monoallyl ether, ethers with polyepichlorohydrin, allylic rearrangement products, **polymers** 27274-31-3DP, polymers with 2-propenyl ethers of hydroxy-contg. **polymers** 31694-55-0DP, allyl ethers rearranged to 2-propenyl ethers, **polymers** 50586-59-9DP, Polyethylene glycol trimethylolpropane ether, allyl ethers rearranged to 2-propenyl ethers, **polymers** 50977-32-7DP, allyl ethers rearranged to 2-propenyl ethers, polymers with polyethylene glycol 2-propenyl monoether 52683-23-5P 156932-43-3DP, allyl ethers, allylic rearrangement products, polymers with polyethylene glycol 2-propenyl monoether 188405-63-2P, Adipic acid-triethylene glycol-polyethylene glycol monoallyl ether copolymer 188405-64-3P 188405-66-5P 188448-16-0P 188451-04-9DP, allylic rearrangement products, polymers with polyethylene glycol 2-propenyl monoether
(**UV-cured**; manuf. and uses of **photocurable** synthetic polymer compns.)

IT 24969-06-0P, Polyepichlorohydrin
(crosslinked, neutralized, etherification with allyl alc. and allylic rearrangement; manuf. and uses of **photocurable** synthetic polymer compns.)

IT 89-32-7P
(esterification with polyethylene glycol mono(2-propenyl ether); manuf. and uses of **photocurable** synthetic polymer compns.)

IT 107-05-1, Allyl chloride
(etherification of ethoxylated polyols; manuf. and uses of **photocurable** synthetic polymer compns.)

IT 107-18-6, Allyl alcohol, reactions
(etherification of polyepichlorohydrin and allylic rearrangement; manuf. and uses of **photocurable** synthetic polymer compns.)

IT 25722-70-7P, Polyglycide
(etherification with allyl chloride and allylic rearrangement; manuf. and uses of **photocurable** synthetic polymer compns.)

IT 9002-89-5, Poly(vinyl alcohol)
(etherification with allyl chloride; manuf. and uses of **photocurable** synthetic polymer compns.)

IT 56-81-5, 1,2,3-Propanetriol, reactions 126-58-9, Dipentaerythritol
(ethoxylation and etherification with allyl chloride; manuf. and uses of **photocurable** synthetic polymer compns.)

IT 75-21-8, Oxirane, reactions
(ethoxylation of glycerol; manuf. and uses of **photocurable** synthetic polymer compns.)

IT 77-99-6
(ethoxylation of; manuf. and uses of **photocurable** synthetic polymer compns.)

IT 125054-47-9, SP 170 176742-27-1, UVR 6974
(**photopolymn.** initiator; manuf. and uses of **photocurable** synthetic polymer compns.)

IT 556-52-5, Oxiranemethanol
(polymn. and etherification with allyl chloride; manuf. and uses

of **photocurable** synthetic polymer compns.)
IT 120246-40-4P 120246-42-6P 121136-33-2P 134247-56-6P
188451-04-9P, Dimethyl adipate-Glycerol monoallyl ether copolymer
(prepn. and allylic rearrangement of; manuf. and uses of
photocurable synthetic polymer compns.)
IT 188405-62-1P
(prepn. and allylic rearrangement; manuf. and uses of
photocurable synthetic polymer compns.)
IT 188405-65-4P
(prepn. and esterification with 2-hydroxyethyl acrylate; manuf.
and uses of **photocurable** synthetic polymer compns.)
IT 25249-16-5P, 2-Hydroxyethyl methacrylate polymer 26022-14-0P,
2-Hydroxyethyl acrylate polymer 156932-43-3P, Ethoxylated
2-hydroxyethyl acrylate
(prepn. and etherification with allyl chloride; manuf. and uses
of **photocurable** synthetic polymer compns.)
IT 26282-59-7P, Allyl glycidyl ether-Ethylene oxide copolymer
(prepn., allylic rearrangement and addn. reaction with isophorone
diisocyanate; manuf. and uses of **photocurable** synthetic
polymer compns.)
IT 27274-31-3P, Polyethylene glycol monoallyl ether
(prepn., allylic rearrangement and esterification with polyester
oligomer; manuf. and uses of **photocurable** synthetic
polymer compns.)
IT 75-56-9, reactions
(propoxylation of glycerol; manuf. and uses of
photocurable synthetic polymer compns.)

L55 ANSWER 3 OF 11 HCA COPYRIGHT 2003 ACS on STN
125:198653 Adhesion promoters for vinyl ether-containing polymer
coatings. Swedo, Raymond J.; Green, George D.; Snyder, James R.
(Alliedsignal Inc., USA). U.S. US 5539014 A 19960723, 17 pp.,
Cont.-in-part of U.S. Ser. No. 274,671. (English). CODEN: USXXAM.
APPLICATION: US 1994-293869 19940819. PRIORITY: US 1994-274671
19940713.
AB Vinyl ether urethane alkoxysilanes are useful as adhesion promoters
for **radiation-cured** vinyl ether-contg. polymer
coating prepd. from compns. contg. vinyl ether-terminated urethane
or ester oligomer and a vinyl ether monomer on glass esp. in manuf.
of **optical fibers**. These vinyl ether urethane
alkoxy silanes have lower volatility and less odor than
trialkoxysilanes, exhibit good compatibility with the polymers, and
are more effective that the trialkoxysilanes under moist conditions.
A typical adhesion promoter was manufd. by reaction of
3-isocyanatopropyltriethoxysilane with 4-
hydroxymethylcyclohexylmethyl vinyl ether.
IC ICM C09J135-08
ICS C08F216-12; C08F230-08; C08F002-50
NCL 522091000
CC 42-5 (Coatings, Inks, and Related Products)
Section cross-reference(s): 57
ST vinyl ether urethane alkoxysilane adhesion promoter;

isocyanatopropyltriethoxysilane adduct coupling agent;
hydroxymethylcyclohexylmethyl vinyl ether adduct coupling agent;
optical fiber coating coupling agent; glass
substrate coating coupling agent; coupling agent vinyl ether polymer
coating

IT Coupling agents
Optical fibers
(vinyl ether urethane alkoxysilane coupling agents for vinyl
ether-contg. **polymer UV-curable**
coatings for glass)

IT Glass, oxide
(vinyl ether urethane alkoxysilane coupling agents for vinyl
ether-contg. **polymer UV-curable**
coatings for glass)

IT Urethane polymers
(vinyl ether-contg.; vinyl ether urethane alkoxysilane coupling
agents for vinyl ether-contg. **polymer UV-**
curable coatings for glass)

IT Coating materials
(**UV-curable**, vinyl ether urethane
alkoxysilane coupling agents for vinyl ether-contg.
polymer UV-curable coatings for
glass)

IT Polyoxyalkylenes, uses
(**polyester-**, **vinyl** ether-contg.; vinyl ether
urethane alkoxysilane coupling agents for vinyl ether-contg.
polymer UV-curable coatings for
glass)

IT **Polyesters**, uses
(polyoxyalkylene-, **vinyl** ether-contg.; vinyl ether
urethane alkoxysilane coupling agents for vinyl ether-contg.
polymer UV-curable coatings for
glass)

IT 24801-88-5, 3-Isocyanatopropyltriethoxysilane 114651-37-5,
4-Hydroxymethylcyclohexylmethyl vinyl ether
(coupling agent precursor; vinyl ether urethane alkoxysilane
coupling agents for vinyl ether-contg. **polymer**
UV-curable coatings for glass)

IT 148795-91-9P 159856-61-8P 165179-23-7P 181308-16-7P
(vinyl ether urethane alkoxysilane coupling agents for vinyl
ether-contg. **polymer UV-curable**
coatings for glass)

IT 181308-17-8P 181308-18-9P
(vinyl ether urethane alkoxysilane coupling agents for vinyl
ether-contg. **polymer UV-curable**
coatings for glass)

L55 ANSWER 4 OF 11 HCA COPYRIGHT 2003 ACS on STN

125:13478 Actinic or gamma radiation-, or electron beam-curable vinyl
ether-based coating systems, and the hydrogen stabilizers and
coupling agents obtained. Swedo, Raymond John; Green, George David;
Snyder, James Ronald (Alliedsignal Inc., USA). PCT Int. Appl. WO

9602596 A1 19960201, 45 pp. DESIGNATED STATES: W: JP; RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1995-US8790 19950713. PRIORITY: US 1994-274671 19940713; US 1994-293613 19940819; US 1994-293869 19940819.

AB The compns. comprise .gtoreq.1 monofunctional and/or multifunctional oligomers and monomers, all contg. a reactive functionality selected from .gtoreq.1 of epoxy, acrylate, vinyl ether, and maleate moieties (.gtoreq.1 of the oligomers and monomers contain a vinyl ether functionality), a photoinitiator, optionally including a sensitizer, selected from a cationic photoinitiator and a radical photoinitiator, and a thermal oxidn. stabilizer. The compns. also contain additives comprising H stabilizers consisting of a mixt. of hindered phenols, org. sulfides or disulfides, and transition metal salts or complexes of org. compds., and .gtoreq.1 additives selected from light screens, color stabilizers, blocking stabilizers, and coupling agents. The vinyl ether-based coatings are lightfast, and hydrolytically, mech., and thermally stable, do not become brittle, and hydrogen generation and blocking are minimal. Adhesion to substrates, esp. glass, is achieved by coupling agents comprising vinyl ether polyurethane-siloxanes. The hindered phenols are selected from .gtoreq.1 of octadecyl 3-(3'5'-di-tert-butyl-4-hydroxyphenyl)-propionate, tetrakis[methylene(3,5-di-tert-butyl-4-hydroxy-hydrocinnamate)]methane, benzenepropanoic acid, and 3,5-bis(1,1-dimethylethyl)-4-hydroxy-,thio-2,1-ethane decyl ester. The org. sulfides and disulfides are selected from .gtoreq.1 of aliph. and arom. sulfides and disulfides. The transition metal salts and complexes are selected from .gtoreq.1 of naphthenates, octoates, 2-Et hexanoates, cyclohexanebutyrates, acetylacetonates, and arene complexes, and the transition metals are selected from Co, Mn, Ni, Cu, and Zn. The vinyl ether polyurethane-siloxane coupling agent is the reaction product of an isocyanate functionality-contg. trialkoxysilane with a hydroxy monovinyl ether. An ester-capped polyester oligomer was prepd. by reacting 0.2 mol 4,8-bis(hydroxymethyl)tricyclo-[5.2.1.02,6]decane with 0.3 mol di-Me isophthalate in the presence of Ti diisopropoxide acetylacetonate catalyst at 140.degree. for 180 min under MeOH formation. The oligomer was capped by reaction with 0.3 mol hydroxybutylvinyl ether. **Optical fibers** were provided with a secondary coating consisting of 60% oligomer, 40% VEctomer 4010 (**vinyl ester** monomer produced by reacting 4-hydroxy Bu vinyl ether with di-Me isophthalate), and 0.5 wt.% UVI-6974 (hexafluoroantimonate; photoinitiator).

IC ICM C09D004-00
ICS C09D004-06

CC 42-10 (Coatings, Inks, and Related Products)
Section cross-reference(s): 57

ST vinyl ether coating material polymer; **radiation curable** coating material glass; **optical fiber radiation curable** coating; monofunctional multifunctional oligomer monomer polymer; photoinitiator cationic radical polymer; antioxidant stabilizer

polymer; hindered phenol stabilizer; org sulfide disulfide stabilizer; transition metal salt complex stabilizer; coupling agent coating material; polyurethane siloxane vinyl ether coupling agent

IT **Optical fibers**
Stabilizing agents
(stabilizers and coupling agents in vinyl ether-based **radiation-curable** coating materials for **optical fibers**)

IT Siloxanes and Silicones, uses
(stabilizers and coupling agents in vinyl ether-based **radiation-curable** coating materials for **optical fibers**)

IT Coupling agents
(vinyl ether urethane siloxanes; stabilizers and coupling agents in vinyl ether-based **radiation-curable** coating materials for **optical fibers**)

IT Disulfides
Sulfides, uses
(aliph., stabilizers; stabilizers and coupling agents in vinyl ether-based **radiation-curable** coating materials for **optical fibers**)

IT Disulfides
Sulfides, uses
(aryl, stabilizers; stabilizers and coupling agents in vinyl ether-based **radiation-curable** coating materials for **optical fibers**)

IT Naphthenic acids, uses
(cobalt salts, stabilizer; stabilizers and coupling agents in vinyl ether-based **radiation-curable** coating materials for **optical fibers**)

IT Transition metal compounds
(complexes, stabilizers; stabilizers and coupling agents in vinyl ether-based **radiation-curable** coating materials for **optical fibers**)

IT Naphthenic acids, uses
(copper salts, stabilizer; stabilizers and coupling agents in vinyl ether-based **radiation-curable** coating materials for **optical fibers**)

IT Naphthenic acids, uses
(manganese salts, stabilizer; stabilizers and coupling agents in vinyl ether-based **radiation-curable** coating materials for **optical fibers**)

IT Naphthenic acids, uses
(nickel salts, stabilizer; stabilizers and coupling agents in vinyl ether-based **radiation-curable** coating materials for **optical fibers**)

IT Siloxanes and Silicones, uses
(polyurethane-, vinyl ether group-contg., coupling agents; stabilizers and coupling agents in vinyl ether-based **radiation-curable** coating materials for **optical fibers**)

IT Coating materials

(**radiation-curable**, stabilizers and coupling agents in vinyl ether-based **radiation-curable** coating materials for **optical fibers**)

IT Transition metal compounds
(salts, stabilizers; stabilizers and coupling agents in vinyl ether-based **radiation-curable** coating materials for **optical fibers**)

IT Urethane polymers, uses
(siloxane-, vinyl ether group-contg., coupling agents; stabilizers and coupling agents in vinyl ether-based **radiation-curable** coating materials for **optical fibers**)

IT **Polyesters**, uses
(**vinyl** group-terminated, oligomeric; stabilizers and coupling agents in vinyl ether-based **radiation-curable** coating materials for **optical fibers**)

IT Naphthenic acids, uses
(zinc salts, stabilizer; stabilizers and coupling agents in vinyl ether-based **radiation-curable** coating materials for **optical fibers**)

IT 78-08-0, Vinyl triethoxysilane 2530-83-8 2530-85-0, M8550 2550-04-1, Allyl triethoxysilane 2897-60-1 3388-04-3, 2-(3,4-Epoxycyclohexyl)ethyl trimethoxysilane 148795-91-9 177182-73-9
(coupling agent; stabilizers and coupling agents in vinyl ether-based **radiation-curable** coating materials for **optical fibers**)

IT 165179-23-7
(oligomeric, coupling agent; stabilizers and coupling agents in vinyl ether-based **radiation-curable** coating materials for **optical fibers**)

IT 177018-55-2P
(oligomers, hydroxybutylvinyl ester-terminated; stabilizers and coupling agents in vinyl ether-based **radiation-curable** coating materials for **optical fibers**)

IT 136-52-7 136-53-8, Zinc 2-ethylhexanoate 501-52-0, Benzenepropanoic acid 557-09-5, Zinc octoate 2082-79-3 3264-82-2, Nickel acetylacetonate 3906-55-6, Nickel cyclohexanebutyrate 4454-16-4, Nickel 2-ethylhexanoate 4995-91-9, Nickel octoate 6535-19-9, Manganese octoate 6683-19-8, Tetrakis[methylene(3,5-di-tert-butyl-4-hydroxy-hydrocinnamate)]methane 6700-85-2, Octanoic acid, cobalt salt 13395-16-9, Copper acetylacetonate 14024-48-7 14024-63-6, Zinc acetylacetonate 14284-89-0, Manganese acetylacetonate 15956-58-8, Manganese 2-ethylhexanoate 20543-04-8, Copper octoate 22221-10-9, Copper 2-ethylhexanoate 35542-88-2 38582-18-2
(stabilizer; stabilizers and coupling agents in vinyl ether-based **radiation-curable** coating materials for **optical fibers**)

IT 104558-94-3, UVI 6974

(stabilizers and coupling agents in vinyl ether-based **radiation-curable** coating materials for **optical fibers**)

IT 103-19-5, p-Tolyl disulfide 149-11-1 150-60-7, Benzyl disulfide 882-33-7, Phenyl disulfide 2082-79-3 2218-80-6 6493-73-8, Benzyl trisulfide 10587-09-4, Dodecyl trisulfide 38582-17-1 55514-85-7, Vultac 3 83803-76-3, TPS 27 104558-95-4, UVI 6990 176854-26-5, 1,4-Etheno-2,3-benzodithiin-5-ol
(stabilizers and coupling agents in vinyl ether-based **radiation-curable** coating materials for **optical fibers**)

IT 159856-61-8
(stabilizers and coupling agents in vinyl ether-based **radiation-curable** coating materials for **optical fibers**)

IT 103-44-6, 2-Ethylhexyl vinyl ether 164978-32-9 175705-37-0, VEX 3010 177018-56-3 177018-57-4 177018-58-5 177500-93-5D, cyclohexanedimethanol monovinyl ether-terminated 177500-94-6D, cyclohexanedimethanol monovinyl ether-terminated
(stabilizers and coupling agents in vinyl ether-based **radiation-curable** coating materials for **optical fibers**)

L55 ANSWER 5 OF 11 HCA COPYRIGHT 2003 ACS on STN
125:13467 Rapid-curing polyester-based **optical fiber** coatings with reduced moisture absorption and water-soluble contents and hydrogen generation and good oxidation resistance. Snyder, James Ronald; Green, George David; Levy, Alvin Charles; Swedo, Raymond John (Alliedsignal Inc., USA). PCT Int. Appl. WO 9606142 A1 19960229, 52 pp. DESIGNATED STATES: W: CA, JP, KR; RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1995-US9674 19950801. PRIORITY: US 1994-293614 19940819.

AB **Optical fiber** coatings may be prepd. from compns. contg. one or more **vinyl** ether **polyester** oligomers prepd. by reacting an hydroxyl-terminated polyester or polyether, a polyol, and a hydroxy monovinyl ether, with one or more mono- or multifunctional vinyl ether terminated monomers, which may be derived from esters or alcs. A **vinyl** ether-terminated **polyester** oligomer (I) was prepd. by reacting 890 g of hydroxybutyl vinyl ether with 4452 g of di-Me isophthalate, 4056 g THF polymer, and 600 g of bishydroxymethyltricyclodecane in 2 steps in the presence of dibutyltin diacetate, and another **vinyl** ether-terminated **polyester** oligomer (II) by reacting 2699 g hydroxybutyl vinyl ether, 4526 di-Me isophthalate, and 3050 g of bishydroxymethyltricyclodecane by similar manner. A secondary (outer) coating was formulated from 65% II and 35% VE 4010 (hydroxybutyl vinyl ether-dimethyl isophthalate reaction product) with 0.8 pph UVI-6974 triarylsulfonium salt and 2.6025 pph stabilizers, and a primary (inner) coating from 80% I, 15% VE 4010, and 5% VEX 3010 (hydroxybutyl vinyl ether-Me benzoate reaction product) with 0.8 pph UVI-6974 and 3.5025 pph stabilizers., giving

photocured products with modulus 767 and 1.2 MPa, resp., elongation at break 21 and 80%, resp., water absorption (24 h immersion) 1.2 and 0.6%, resp., and water extractables (24 h immersion) 2.0 and 0.6%, resp.

IC ICM C09D167-07
ICS C09D004-06; C08F290-14; C03C025-02

CC 42-10 (Coatings, Inks, and Related Products)

ST **vinyl** terminated **polyester photocurable** coating; **optical fiber photocurable** coating water resistant; antioxidant **optical fiber** coating; hydrogen generation resistant **optical fiber** coating

IT **Optical fibers**
(rapid-curing polyester-based **optical fiber** coatings with reduced moisture absorption and water-sol. contents and hydrogen generation and good oxidn. resistance)

IT Crosslinking agents
(photochem., rapid-curing polyester-based **optical fiber** coatings with reduced moisture absorption and water-sol. contents and hydrogen generation and good oxidn. resistance)

IT Coating materials
(**photocurable**, water-resistant, rapid-curing polyester-based **optical fiber** coatings with reduced moisture absorption and water-sol. contents and hydrogen generation and good oxidn. resistance)

IT **Polyesters**, uses
(**vinyl** group-terminated, rapid-curing polyester-based **optical fiber** coatings with reduced moisture absorption and water-sol. contents and hydrogen generation and good oxidn. resistance)

IT 93-58-3D, Methyl benzoate, reaction products with hydroxybutyl vinyl ether 1459-93-4D, Dimethyl isophthalate, reaction products with hydroxybutyl vinyl ether 2459-10-1D, Trimethyl trimellitate, reaction products with hydroxybutyl vinyl ether 17832-28-9D, reaction products with esters
(**photocrosslinking** agents; rapid-curing polyester-based **optical fiber** coatings with reduced moisture absorption and water-sol. contents and hydrogen generation and good oxidn. resistance)

IT 177578-48-2P 177578-49-3P 177578-50-6P 177578-51-7P
(rapid-curing polyester-based **optical fiber** coatings with reduced moisture absorption and water-sol. contents and hydrogen generation and good oxidn. resistance)

L55 ANSWER 6 OF 11 HCA COPYRIGHT 2003 ACS on STN
120:247476 **UV-curable** coatings for **optical fibers**. Saito, Osamu; Hatsutori, Iwao; Ichinose, Eiju (Dainippon Ink & Chemicals, Japan). Jpn. Kokai Tokkyo Koho JP 05271619 A2 19931019 Heisei, 14 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1992-73953 19920330.

AB Title coatings contain (A) radical-curable reaction products from

unsatd. group-ended and OH-contg. isocyanuric acid derivs., polyisocyanates, and/or unsatd. group-ended and OH-contg. compds., optionally with (B) epoxy acrylates, (C) urethane acrylates, and (D) polymeric diluents. A compn. contg. HMDI-trishydroxyethyl isocyanurate acrylate ester reaction product, bisphenol diglycidol ether acrylate ester, isobornyl acrylate, and N-vinyl-2-pyrrolidone, and an initiator was **cured** with **UV** irradn. to form a sheet with stiffness 238 kg/mm2 and shrinkage 4.8%.

IC ICM C09D175-16
ICS C03C025-02; C08F299-02; C08F299-06; C09D004-02; G02B006-44

ICA C08G018-04; C08G018-40; C08G018-67

CC 42-10 (Coatings, Inks, and Related Products)
Section cross-reference(s): 73

ST isocyanurate acrylate ester polyisocyanate product coating; acrylic epoxy polyurethane coating **optical fiber**; stiffness acrylic epoxy polyurethane coating; low shrinkage acrylic epoxy polyurethane coating

IT **Optical fibers**
(coatings for, **UV-curable**, contg.. isocyanurate acrylate ester polyisocyanate products, stiff, with low shrinkage)

IT Coating materials
(**UV-curable**, isocyanurate acrylate ester polyisocyanate product-contg., stiff, with low shrinkage, for **optical fibers**)

IT Urethane polymers, uses
(acrylic, isocyanurate group-contg., for coatings for **optical fibers**, **UV-curable**)

IT Urethane polymers, preparation
(acrylic-epoxy, isocyanurate group-contg., for coatings for **optical fibers**, **UV-curable**)

IT Epoxy resins, preparation
(acrylic-polyurethane-, isocyanurate group-contg., for coatings for **optical fibers**, **UV-curable**)

IT 88-12-0D, N-Vinyl-2-pyrrolidone, polymers with trishydroxyethyl isocyanurate acrylate ester and polyisocyanates and vinyl compds. and/or acrylic polyester (or polyether) polyurethanes and/or epoxy acrylates 818-61-1D, polymers with polyester or polyether polyurethanes and trishydroxyethyl isocyanurate acrylate **ester** and **vinyl** compds. and/or epoxy acrylates
822-06-0D, HMDI, polymers with trishydroxyethyl isocyanurate acrylate **ester** and **vinyl** compds. and/or acrylic polyester (or polyether) polyurethanes and/or epoxy acrylates
3779-63-3D, polymers with trishydroxyethyl isocyanurate acrylate **ester** and **vinyl** compds. and/or acrylic polyester (or polyether) polyurethanes and/or epoxy acrylates 4098-71-9D, Isophorone diisocyanate, polymers with .epsilon.-caprolactone-based polyols and hydroxyethyl acrylate and trishydroxyethyl isocyanurate acrylate **ester** and **vinyl** compds. and/or epoxy acrylates 4687-94-9D, polymers with trishydroxyethyl isocyanurate acrylate ester and polyisocyanates and vinyl compds. and/or acrylic

polyester (or polyether) polyurethanes 5888-33-5D, Isobornyl acrylate, polymers with trishydroxyethyl isocyanurate acrylate ester and polyisocyanates and vinyl compds. and/or acrylic polyester (or polyether) polyurethanes and/or epoxy acrylates 9068-94-4D, Adipic acid-1,4-butane diol-TDI copolymer, reaction products with hydroxyethyl acrylate and trishydroxyethyl isocyanurate acrylate ester and polyisocyanates and vinyl compds. and/or epoxy acrylates 24980-41-4D, .epsilon.-Caprolactone homopolymer, polyol derivs., polymers with isophorone diisocyanate and hydroxyethyl acrylate and trishydroxyethyl isocyanurate acrylate **ester** and **vinyl** compds. and/or epoxy acrylates 25190-06-1D, PTMG, polymers with IPDI, hydroxyethyl acrylate and trishydroxyethyl isocyanurate acrylate ester and polyisocyanates and vinyl compds. and/or epoxy acrylates 26763-58-6D, polymers with trishydroxyethyl isocyanurate acrylate **ester** and **vinyl** compds. and/or acrylic polyester (or polyether) polyurethanes and/or epoxy acrylates 80413-54-3D, polymers with trishydroxyethyl isocyanurate acrylate ester and polyisocyanates and vinyl compds. and/or acrylic polyester (or polyether) polyurethanes and/or epoxy acrylates 88403-03-6D, Tris(2-hydroxyethyl) isocyanurate acrylate ester, polymers with polyisocyanates and vinyl compds. and/or acrylic polyester (or polyether) polyurethanes and/or epoxy acrylates
(coatings, **UV-curable**, stiff, with low shrinkage, for **optical fibers**)

L55 ANSWER 7 OF 11 HCA COPYRIGHT 2003 ACS on STN

120:220516 **UV-curable** coatings for **optical fibers**. Saito, Osamu; Hatsutori, Iwao; Ichinose, Eiju (Dainippon Ink & Chemicals, Japan). Jpn. Kokai Tokkyo Koho JP 05271618 A2 19931019 Heisei, 14 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1992-73952 19920330.

AB Title coatings contain (A) radical-curable reaction products from epoxy acrylates, polyisocyanates, and unsatd. group-terminated and OH-contg. compds., optionally with (B) acrylic isocyanurates, (C) acrylic polyurethanes, and (D) polymeric diluents. A compn. contg. an initiator, isobornyl acrylate, N-vinyl-2-pyrrolidone, and a reaction product of isophorone diisocyanate, 1:1 .epsilon.-caprolactone-hydroxyethyl acrylate adduct, and bisphenol A epoxy resin acrylate ester was **UV-cured** to form a sheet with stiffness 205 kg/mm2 and shrinkage 5.1%.

IC ICM C09D175-16
ICS C03C025-02; C08F299-02; C08F299-06; G02B006-44

ICA C08G018-38; C08G018-58

CC 42-10 (Coatings, Inks, and Related Products)
Section cross-reference(s): 73

ST acrylic epoxy polyurethane coating **optical fiber** ; stiffness acrylic epoxy polyurethane coating; low shrinkage acrylic epoxy polyurethane coating

IT **Optical fibers**
(coatings for, **UV-curable**, contg. isocyanurate acrylate ester polyisocyanate adducts, stiff, with low shrinkage)

IT Coating materials
(**UV-curable**, acrylic epoxy polyurethanes, stiff, with low shrinkage, for **optical fibers**)

IT Urethane polymers, preparation
(acrylic-epoxy, coatings, **UV-curable**, stiff, with low shrinkage, for **optical fibers**)

IT Epoxy resins, preparation
(acrylic-polyurethane-, coatings, **UV-curable**, stiff, with low shrinkage, for **optical fibers**)

IT 75-56-9D, polymers with polyester or polyether polyurethanes and trishydroxyethyl isocyanurate acrylate **ester** and **vinyl** compds. and acrylic epoxy polyurethanes 79-10-7D, Acrylic acid, esters with phenolic epoxy resin, polymers with diisocyanates and hydroxy-contg. acrylates and vinyl compds. and/or acrylic isocyanurates and/or acrylic polyester (or polyether) polyurethanes 88-12-0D, N-Vinyl-2-pyrrolidone, polymers with acrylic epoxy polyurethanes and trishydroxyethyl isocyanurate acrylate ester and polyiosocyanates and vinyl compds. and/or acrylic polyester (or polyether) polyurethanes 109-99-9D, THF, polymers with polyester or polyether polyurethanes and trishydroxyethyl isocyanurate acrylate **ester** and **vinyl** compds. and acrylic epoxy polyurethanes and TDI 818-61-1D, polymers with bisphenol epoxy resin acrylate **esters** and **vinyl** compds. and/or acrylic isocyanurates and/or acrylic polyester (or polyether) polyurethanes and IPDI 822-06-0D, HMDI, polymers with trishydroxyethyl isocyanurate acrylate ester and acrylic epoxy polyurethanes and vinyl compds. and/or acrylic polyester (or polyether) polyurethanes 3779-63-3D, polymers with trishydroxyethyl isocyanurate acrylate ester and acrylic epoxy polyurethanes and vinyl compds. and/or acrylic polyester (or polyether) polyurethanes 4098-71-9D, Isophorone diisocyanate, polymers with caprolactone-hydroxyethyl acrylate adduct and bisphenol epoxy resin acrylate **esters** and **vinyl** compds. and/or acrylic isocyanurates and/or acrylic polyester (or polyether) polyurethanes 5888-33-5D, Isobornyl acrylate, polymers with acrylic epoxy polyurethanes and trishydroxyethyl isocyanurate acrylate ester and polyiosocyanates and vinyl compds. and/or acrylic polyester (or polyether) polyurethanes 25190-06-1D, polymers with hydroxyethyl acrylate and trishydroxyethyl isocyanurate acrylate ester and polyisocyanates and vinyl compds. and acrylic epoxy polyurethanes and IPDI 26471-62-5D, polymers with hydroxyethyl acrylate and trishydroxyethyl isocyanurate acrylate ester and polyisocyanates and vinyl compds. and acrylic epoxy polyurethanes 55818-57-0D, polymers with diisocyanates and hydroxy-contg. acrylates and vinyl compds. and/or acrylic isocyanurates and/or acrylic polyester (or polyether) polyurethanes 80413-54-3D, polymers with diisocyanates and bisphenol epoxy resin acrylate **esters** and **vinyl** compds. and/or acrylic isocyanurates and/or acrylic polyester (or polyether) polyurethanes 88403-03-6D, polymers with polyisocyanates and acrylic epoxy

polyurethanes and vinyl compds. and/or acrylic polyester (or polyether) polyurethanes
(coatings, **UV-curable**, stiff, with low shrinkage, for **optical fibers**)

L55 ANSWER 8 OF 11 HCA COPYRIGHT 2003 ACS on STN
118:8370 Compositions of vinyl ether monomers and vinyl ether derivatives of urethane oligomers, and **optical fibers** coated with them. Lapin, Stephen Craig; Levy, Alvin Charles (Allied-Signal Inc., USA). PCT Int. Appl. WO 9204388 A1 19920319, 33 pp. DESIGNATED STATES: W: AU, BB, BG, BR, CA, FI, HU, JP, KP, KR, LK, MC, MG, MW, NO, PL, RO, SD, SU; RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LU, NL, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1991-US4233 19910613. PRIORITY: US 1990-574705 19900829.

AB Rapid-curing compns. giving coatings with good low-temp. properties and water resistance for **optical fibers** contain **vinyl** ether-terminated **esters**, **vinyl** ethers, and reaction products of hydroxy monovinyl ethers, polyisocyanates, and hydroxy-terminated polyesters or polyethers with d.p. 1-100. Thus, a compn. contg. poly(propylene adipate)-modified MDI-4-(hydroxymethyl)cyclohexylmethyl vinyl ether adduct 1,4-cyclohexanedimethanol divinyl ether (I) soln. 55, I 10, bis[4-(vinyloxy)butyl] isophthalate 15, bis[4-(vinyloxy)butyl] succinate 20, and photoinitiator 0.5 part was applied to a glass plate with a 3-mil applicator and exposed to a Hg arc lamp with a dose of 0.5 J/cm2 to give a coating with breaking elongation 18%, elastic modulus 1000 MPa at 1 Hz, wt. change 2% after 24 h in water, and dose-to-full-cure 0.3-0.5 J/cm2, useful for outer layers on **optical fibers**.

IC ICM C08F299-06
ICS C09D175-16; G02B006-02

CC 42-10 (Coatings, Inks, and Related Products)
Section cross-reference(s): 57, 73

ST vinyl polyurethane **photocured** coating; **optical fiber photocured** coating; polypropylene adipate vinyl polyurethane coating; vinyloxymethylcyclohexanemethanol polyester polyurethane coating; vinyloxybutyl isophthalate vinyl polyurethane coating; succinate vinyloxybutyl vinyl polyurethane coating; water resistance **optical fiber** coating

IT **Optical fibers**
(coatings for, water-resistant, **UV-cured** vinyl ether-crosslinked **vinyl polyester** -polyurethanes as)

IT Coating materials
(**UV-curable**, water-resistant, **vinyl** -terminated **polyester**-polyurethane-based, for **optical fibers**)

IT Urethane polymers, uses
(**polyester-**, **vinyl** group-terminated, coatings, **UV-cured** vinyl ether-crosslinked water-resistant, for **optical fibers**)

IT Urethane polymers, uses
(polyether-, vinyl group-terminated, coatings, **UV-cured** vinyl ether-crosslinked water-resistant, for **optical fibers**)

IT 17351-75-6, 1,4-Cyclohexanedimethanol divinyl ether 17832-28-9D, 4-Hydroxybutyl vinyl ether, reaction products with polyester-polyurethanes 80675-03-2D, reaction products with [(hydroxymethyl)cyclohexyl]methyl vinyl ether 114651-37-5D, 4-(Hydroxymethyl)cyclohexylmethyl vinyl ether, reaction products with polyester-polyurethanes 130066-57-8 131132-77-9 135876-32-3 144429-21-0, 4-(Vinyloxy)butyl benzoate 144429-22-1, 2-(2-Ethylhexyloxy)ethyl vinyl ether 144974-54-9D, reaction products with hydroxybutyl vinyl ether
(**photocurable** coating compns. contg., for **optical fibers**)

L55 ANSWER 9 OF 11 HCA COPYRIGHT 2003 ACS on STN

114:166451 Free-radical curable **vinyl** ether oligomer-**polyester** compositions. Noren, Gerry K.; Krajewski, John J.; Zimmerman, John M.; Shama, Sami A. (DeSoto, Inc., USA). PCT Int. Appl. WO 9010660 A1 19900920, 62 pp. DESIGNATED STATES: W: AU, CA, JP; RW: AT, BE, CH, DE, DK, ES, FR, GB, IT, LU, NL, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1990-US1243 19900307. PRIORITY: US 1989-319566 19890307; US 1989-404578 19890908; US 1989-437374 19891115.

AB Soft and flexible, low-toxicity coatings are prepd. from compns. contg. (A) .gtoreq. 1 oligomer contg. .gtoreq.1 electron-rich ethylenically unsatd. group and/or a satd. polyester contg. .gtoreq.1 electron deficient ethylenically unsatd. end group, and (B) .gtoreq.1 of functional diluent, mixt. of functional diluents, and a dual functional monomer; where electron-rich double bond/electron deficient double bond ratio 5-1:1-5. A compn. contg. IPDI-Tone 2201 copolymer (1:1 equiv.) reaction product with 4-hydroxybutyl vinyl ether 83.6, di-Et maleate 13.4, phenothiazine 0.1, and Lucirin TPO 2.9% was applied on glass plates and cured at <1.0 J/cm2 to give coatings suitable for **optical fibers** having tensile strength 4.6 MPa, elongation 150%, and water absorption (24 h immersion) 0.7%, vs. 1.4, 80, and 2.0, resp., for a com. acrylate coating compn.

IC ICM C08G065-34
ICS C08L071-02; B32B017-10; G02B006-02

CC 42-10 (Coatings, Inks, and Related Products)
Section cross-reference(s): 39, 43

ST vinyl ether oligomer coating **photocurable**; **ester vinyl** ether diluent; urethane vinyl ether adduct; ethyl maleate diluent coating; polyester unsatd coating **photocurable**; **optical fiber** glass coating **photocurable**; soft flexible **photocurable** coating **photocurable**

IT Concrete
Leather
Optical fibers

Paper
Textiles
Rubber, butadiene-styrene, uses and miscellaneous
(coatings for, contg. vinyl ether oligomer and/or polyester, radically-curable)

IT Coating materials
(flexible, free-radically curable, vinyl ether oligomer and/or polyester, for **optical** glass **fibers**)

IT Rubber, urethane, compounds
(reaction products, with hydroxybutyl vinyl ether, for coatings for **optical** glass **fibers**)

IT Fatty acids, polymers
(unsatd., dimers, reaction products, with Butyl Carbitol ester of isocyanurate compd., for coatings for **optical** glass **fibers**)

IT 132878-87-6D, reaction product with hydroxybutyl vinyl ether
132910-22-6D, reaction product with hydroxybutyl vinyl ether
(coatings contg, with dual functional monomer and diluent, radically-curable, flexible, for **optical** glass **fibers**)

IT 17832-28-9D, 4-Hydroxybutyl vinyl ether, urethane adduct
(coatings contg., with dual functional monomer and diluent, radically-curable, flexible, for **optical** glass **fibers**)

IT 133174-34-2D, reaction product with dimer acid 133174-35-3
133200-41-6
(coatings contg., with vinyl ether diluent, for **optical** glass **fibers**)

IT 141-05-9, Diethyl maleate
(coatings contg., with vinyl ether oligomer and dual functional monomer, radically-curable, for **optical** glass **fibers**)

IT 765-12-8, 3,6,9,12-Tetraoxatetradeca-1,13-diene
(coatings contg., with vinyl ether oligomer in dual functional monomer, radically-curable, for **optical** glass **fibers**)

IT 132878-88-7 132878-89-8 132878-90-1 132878-90-1 132878-96-7
132878-97-8
(coatings, contg., **photocurable**, on aluminum)

IT 17832-28-9, 4-Hydroxybutyl **vinyl** ether
(**esterification** of, with di-Et maleate)

IT 132404-45-6P
(prepn. and use of, in **photocurable** coatings)

L55 ANSWER 10 OF 11 HCA COPYRIGHT 2003 ACS on STN
113:134275 **Ultraviolet-curable** cationic vinyl ether polyurethane coating compositions for **optical fibers**. Shama, Sami A.; Poklacki, Erwin S.; Zimmerman, John M. (DeSoto, Inc., USA). PCT Int. Appl. WO 9002614 A1 19900322, 26 pp. DESIGNATED STATES: W: AU, DK, FI, JP, NO; RW: AT, BE, CH, DE, FR, GB, IT, LU, NL, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1989-US3980 19890913. PRIORITY: US 1988-243794 19880913.

AB Liq. title compns., useful for 2.5-6-mil-thick primary or single layers on **optical fibers**, contain a cationic photoinitiator, C1-10 alkylenebis(phenylene isocyanates), and NCO-reactive compds. including a monohydric vinyl ether, with the polyurethane having no.-av. mol. wt. (Mn) 2000-6000. Thus, heating 20.91 parts MDI to 60.degree., adding 22.77 parts 1,4-butanediol divinyl ether (I), adding 4-hydroxybutyl vinyl ether in 10 min, heating 2 h at 60.degree., adding an appropriate amt. of Tone 220 (Mn 1000, diethylene glycol-initiated polycaprolactone) and 0.06 parts dibutyltin dilaurate in 10 min, and heating at 70.degree. until the NCO content was >0.1% gave a I-modified resin with Mn 2400. A compn. (viscosity 1540 s, n 1.488) contg. this I-modified resin 72, triethylene glycol divinyl ether 27.5, and UVE 1016 (50% active) photoinitiator was applied at 3-mil drawdown on a glass plate and cured with a 12-in D lamp at 1/cm2 to give a coating with tensile strength 12 MPa, elongation 38%, modulus 60, and water absorption 4.7% (free coating was immersed 24 h in water).

IC ICM B05D003-06

CC 42-10 (Coatings, Inks, and Related Products)
Section cross-reference(s): 37, 57

ST **photocurable** cationic vinyl polyurethane coating; **optical fiber photocurable** polyurethane coating; polycaprolactone polyurethane vinyl **photocurable** coating; **polyester** polyurethane **vinyl photocurable** coating; MDI vinyl polyurethane **photocurable** coating

IT **Optical fibers**
(**photocurable** coatings for, vinyl ether-terminated polyurethanes as)

IT Coating materials
(**UV-curable**, vinyl ether-terminated polyurethane, for **optical fibers**)

IT 129457-80-3P 129458-67-9P 129471-97-2P
(manuf. of, as **photocured** coatings, for **optical fibers**)

IT 17832-28-9DP, 4-Hydroxybutyl vinyl ether, reaction products with polyester polyurethanes 26428-46-6DP, reaction products with hydroxybutyl vinyl ether 55279-65-7DP, reaction products with hydroxybutyl vinyl ether 129458-68-0DP, reaction products with hydroxybutyl vinyl ether
(manuf. of, for **photocurable** coatings for **optical fibers**)

L55 ANSWER 11 OF 11 HCA COPYRIGHT 2003 ACS on STN

108:95767 Low-refractive-index fluoropolymer compositions for **optical fibers**. Hashimoto, Yutaka; Kamei, Masayuki; Baba, Toshihiko (Dainippon Ink and Chemicals, Inc., Japan). Jpn. Kokai Tokkyo Koho JP 62199643 A2 19870903 Showa, 17 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1986-40383 19860227.

AB Actinic **radiation-curable** compns. contain polymers with .gtoreq.30% F and F-contg. monomers, and have n

.ltoreq.1.44 after curing. CH2:CHCO2CH2CH2C8F17 (I) 180, di-Bu fumarate (II) 10, and Bu acrylate 10 g were polymd. using AIBN to give a fluoropolymer contg. 56.1% F. Mixing this fluoropolymer 50, I 45, II 5, and PhCOCMe2OH (initiator) 4 parts gave a compn. (viscosity 8500 cP at 25.degree.) with nD25 1.362 after **curing** with **UV light**, which showed excellent adhesion to poly(Me methacrylate) (III), polystyrene, and glass surfaces. Coating III and glass **optical fiber** cores with the compn. and curing gave products showed transmission loss 290 db/250 m and 0.1 db/20 m, resp., vs. 660 db/250 m and 50 db/20 m for fibers coated with C2F4-C3F6 copolymer.

IC ICM C08L027-12
ICS C08F002-46; C08F291-00; C08K005-02; C08L025-18; C08L101-00; C09D003-727; C09D005-00; G02B001-04; G02B006-10

CC 38-3 (Plastics Fabrication and Uses)

ST low loss **optical fiber** sheath; fluoropolymer sheath **optical fiber**; **radiation curable** fluoropolymer coating; **UV curable** fluoropolymer coating

IT Fluoropolymers
(sheaths, with low refractive index, for **optical fibers**, **radiation-curable** monomer-**polymer** compns. for)

IT **Optical fibers**
(low-loss, core/sheath composites, with **radiation-curable** fluoropolymer sheaths)

IT 110-17-8D, fluoroalkyl **esters**, polymers with **vinyl** compds. 2714-32-1D, Difluorofumaric acid, fluoroalkyl **esters**, polymers with **vinyl** compds. 112868-80-1
112869-25-7 112869-26-8 112869-29-1 112869-30-4 112869-31-5
112869-32-6 112898-62-1 112898-67-6 112966-14-0 112966-20-8
(sheaths, with low refractive index, for **optical fibers**, **radiation-curable** monomer-**polymer** compns. for)